

# PROCEEDINGS OF THE MERCHANT MARINE COUNCIL

UNITED STATES COAST GUARD



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## *SAFETY IS PLANNED*



# MERCHANT MARINE COUNCIL

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and three Marine Inspection Officers are  
designated as members by the Commandant.

## SPECIAL MOTORBOAT ISSUE

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## MOTORBOATING FOR 1951

The 1951 motorboat season is here. Again the proceedings wishes to bring to mind an old adage "Eternal vigilance is the price of safety" so don't let an accident spoil YOUR holiday.

To skim quickly over the water in a refreshing breeze is what more people want to do each year. Motorboats can be a great source of pleasure or they can be a menace to life and property. In one Coast Guard district it was informally reported that on the average of once a week a motorboat was involved in an explosion and fire. Many of these accidents are not reported in Coast Guard statistics because property damage did not exceed \$1,500, nor were any persons seriously injured or killed. The need for vigilance in the prevention of accidents is more important than ever. To save a life or to save a person from injury or to save a ship from disaster is the greatest contribution a boatman can make to society. The best safety measure is, therefore, a careful boatman.

Statistics by themselves are not interesting because they do not show the human suffering and personal losses that may be reflected thereby. Neither is it possible to show by sta-

tistics all the near accidents that occur. Every "near accident" should be treated as a "warning." On June 30, 1950, there were 7,230 more vessels bearing identification numbers issued by the Coast Guard than on June 30, 1949. These vessels do not include the small motorboats that are less than 16 feet in length. It is impossible to estimate the total increase in the number of pleasure craft on the navigable waters of the United States. A tragic note reflected by other statistics is that during the period from June 30, 1949, to June 30, 1950, 50 more people were killed than reported for the period from June 30, 1948, to June 30, 1949. While the casualty statistics cannot be compared directly with the number of vessels issued identification numbers by the Coast Guard, it is shocking to note that the number of deaths has been increasing at an alarming rate far in excess of the numbers of vessels being added each year to the pleasure and commercial fleet of the United States.

Famous Last Words:

"It can't happen to me."

The deaths occurring on motorboats and motor vessels of less than 300 gross tons reported to the Coast Guard are as follows:

Fiscal year:	Deaths
1950.....	203
1949.....	153
1948.....	90
1947.....	79
1946.....	59

From these sobering figures it is well to consider that safety must start with yourself before you even put your foot inside a motorboat. The person who operates a motorboat has a responsibility not only for his own welfare but for the welfare of those who may be his guests. Therefore, it is essential to let no EMERGENCY catch you OFF GUARD. The primary responsibility for the avoidance of preventable accidents rests with the boatmen themselves.

Professional knowledge of the Rules of the Road is, perhaps, too much to expect of operators of small pleasure craft. However, is it too much to expect operators of small pleasure craft to possess and exercise ordinary common-sense seamanship?

The operation of pleasure craft is left within the discretion of the boatmen by present Federal and State laws. It is becoming more apparent every day that some new drastic means will be needed to reduce the loss of life now occurring. Therefore, unless individual boatmen assume their responsibility voluntarily to exercise more prudent operation, steps may have to be recommended which will eventually require all persons operating pleasure craft to demonstrate their ability to navigate a boat with safety on United States waters.

When reviewing the casualties or should we say—the tragedies—that occurred during the 1950 Motorboat Season, it is extremely difficult to put into proper words the carelessness and negligence of so many people who just wanted a little FUN out of life. These tragedies include both the careless and negligent navigation of pleasure craft with resultant loss of life, and the careless and negligent manner in which the owners allowed their pleasure craft to become unseaworthy. For example, the following are a few specific violations of the ordinary practice of seamanship:

1. Traveling at excessive rates of speed in a congested area.
2. Failure to keep to the right-hand side of the channel.
3. Failure to observe obvious restricted areas.
4. Unnecessarily holding the right-of-way in a narrow channel, when safe navigation for small vessels exists outside the dredged channel, thereby creating a dangerous or diffi-

cult situation for large, unmaneuverable, seagoing vessels.

The following list depicts a few of the cases wherein lives were lost due to the unseaworthiness of pleasure craft:

1. Faulty ignition resulting in explosion or fire;
2. Lack of proper ventilation resulting in explosion;
3. Lack of general knowledge relative to upkeep of machinery on small craft;
4. Careless handling of fuel;
5. Insufficient life-preserving equipment on board.

Owners of pleasure craft are increasingly creating a situation charged with danger, not only to themselves, but also to the vast shipping industry. In dwelling on those cases wherein lives have been lost and property damaged, it is interesting to note that fire and explosion rank high among the causes.

In order to have fire, three vital elements must be present, namely, fuel, heat (source of ignition), and oxygen. The absence of any one of these three elements eliminates any possibility of fire. It is further interesting to note that a concentration as low as 1½ percent of gasoline vapor in air, by volume, is practically odorless, but is a mixture which may be exploded by a slight spark. An explosive mixture of this nature may travel a considerable distance from the point of leakage before becoming dissipated.

The "Proceedings" has listed below a general formula that each and every owner and operator of pleasure craft should check to fully satisfy himself that his craft is safe. The questions are so worded that a negative answer will indicate an unsatisfactory condition.

#### ENGINE AND ACCESSORIES

1. Are all carburetors fitted with backfire flame arresters? Yes ☐ No ☐
2. Are the carburetors (except downdraft type) fitted with a drip pan underneath to prevent gasoline from dripping into bilges? Yes ☐ No ☐
3. Is the exhaust pipe in good condition and arranged and insulated so as not to scorch or ignite adjacent woodwork? Yes ☐ No ☐
4. Is the muffler, if fitted inboard, absolutely tight, so that no carbon monoxide fumes can leak into the structure of the boat? Yes ☐ No ☐

#### HULL

1. Was the hull examined for rot, loose fastenings, split planks, and other deterioration or damage? Yes ☐ No ☐
2. Were all seams searched and caulked? Yes ☐ No ☐ (Avoid excess caulking when dried out.)
3. Were all underwater fittings such as sea cocks, scuppers, toilet outlets, stuffing boxes, etc., examined and defective or badly deteriorated parts repaired or removed? Yes ☐ No ☐
4. Are the hull and all underwater fittings now in good condition? Yes ☐ No ☐
5. Is the number awarded displayed on each bow? Yes ☐ No ☐
6. Is the Certificate of Award of Number on board as legally required? Yes ☐ No ☐
7. Are the name and hailing port of your documented yacht displayed conspicuously on the hull and is the official number and net tonnage permanently marked or carved on the main beam? Yes ☐ No ☐

#### FUEL, TANKS, PIPING, ETC.

1. Are fuel tanks in good condition and properly secured to prevent vibration or movement? Yes ☐ No ☐
2. Are filling, sounding pipes, and vents so arranged that vapors, both from filling pipes and from vents, as well as fuel in case of overflow when filling, will not enter the interior of the boat? Yes ☐ No ☐
3. Are such filling and sounding pipes tightly attached to the tank and to a deck fitting? Yes ☐ No ☐
4. Do the filling pipes extend nearly to the bottom of the tank? Yes ☐ No ☐
5. Is the fuel-tank vent pipe solidly attached to the top of the tank? Yes ☐ No ☐
6. Does the fuel-tank vent pipe terminate in the open air, clear of openings in the vessel's hull, cabins, etc.? Yes ☐ No ☐
7. Can the fuel supply be shut off at the tank, the shut off control being outside the compartment in which tank is located? Yes ☐ No ☐
8. Are all drain openings in fuel tanks, fuel piping, etc., fitted with solid plugs? Yes ☐ No ☐
9. Is the entire fuel system, including piping and fittings, tight and in good condition, containing no pet cocks which might accidentally release fuel into the bilges? Yes ☐ No ☐



#### EQUIPMENT

1. Are all life preservers, buoyant cushions, ring buoys, fire-fighting equipment, navigation lights, etc., in good serviceable condition and ready for immediate use? Yes ☐ No ☐
2. Have carbon dioxide extinguishers, which are more than ten percent underweight, been recharged? Yes ☐ No ☐
3. Have all foam type extinguishers been recharged during the past 12 months in accordance with manufacturer's instructions? Yes ☐ No ☐
4. Have carbon tetrachloride extinguishers been tested and are they full? Yes ☐ No ☐
5. Are tags attached to each extinguisher showing the date of last recharge? Yes ☐ No ☐
6. Is the vessel equipped with proper ground tackle? Yes ☐ No ☐
7. Is all ground tackle in good condition? Yes ☐ No ☐
8. Is vessel provided with a hand pump of ample capacity for removing water from bilges? Yes ☐ No ☐
9. Is all equipment located in a permanent place and readily accessible, in case of an emergency? Yes ☐ No ☐
10. Have you checked to see that your fire extinguishers are not too close to the most likely site of a fire, so that in case of fire in such a site, the extinguisher will not then become inaccessible to you? Yes ☐ No ☐
11. Are all of the requirements for approved equipment, safety devices, and installations, as provided by the Motorboat Act and required by the Coast Guard's rules and regulations for motorboats and certain motor vessels complied with? Yes ☐ No ☐

#### ELECTRICAL SYSTEM

1. Is the entire electrical system in good condition? Yes ☐ No ☐
2. Are marine-type electrical appliances and fittings installed in spaces likely to contain explosive mixtures, such as gasoline and fuel tank compartments, and near storage batteries which are charged on board? Yes ☐ No ☐
3. Are electric storage batteries located in a well-ventilated space? Yes ☐ No ☐
4. Are such batteries protected to prevent metallic objects being dropped on the batteries, shorting them, and causing sparks? Yes ☐ No ☐

#### SAFETY PRECAUTIONS DURING FUELING OPERATIONS

1. Before taking on fuel, see that the vessel is properly moored and that all ports and doors adjacent to the fuel-tank vent and fill pipes are closed. This is necessary because gasoline vapors are heavier than air and will seek the lowest part of the cabin, engine room, etc., and present a serious hazard. Coal fires should be banked, other fires should be extinguished, and galley should be closed.
2. While refueling, prohibit smoking; the use of matches or cigarette lighters; operation of stoves, refrigerators, or machinery; the pulling of switches; or any such act likely to cause the ignition of petroleum vapors.
3. To guard against static spark, place nozzle of filling hose, or can, in metallic contact with fill pipe before starting to fill and maintain continuous contact until finished. *This is important!*
4. After fueling operations are completed, close filling pipe and wipe up any gasoline which may have spilled. Open up all ports and doors which may have been closed and air out properly before striking matches, starting machinery, etc.
5. Refueling of the vessel should be accomplished in daylight hours.

#### GENERAL SAFETY PRECAUTIONS

1. When getting the vessel ready for a trip, be sure that all compartments are properly aired out and, until this is accomplished, do not permit the engine to be started or allow smoking, the use of matches, cigarette lighters, or other actions which may constitute a source of vapor ignition.
2. Only safety matches should be used on board.
3. A good seaman is cautious. Be alert to sudden changes in weather.
4. A black squall (thunder shower) always can be dangerous. Be prepared for the worst. If caught in exposed waters take every possible precaution in advance.
5. Advise your guests where the life preservers or buoyant cushions are to be found.
6. Restrict smoking to certain parts of the vessel.

TAKING CHANCES MAY TAKE YOUR LIFE

#### VENTILATION

1. Are all enclosed parts of the vessel provided with means for proper ventilation? Yes ☐ No ☐
2. Is the ventilating system for spaces, such as engine rooms and those containing gasoline machinery, arranged to circulate air in the lower part or bilge? Yes ☐ No ☐

#### BE CAREFUL! THE LIFE YOU SAVE MAY BE YOUR OWN

##### A Prudent Operator Will Observe the Following Prohibitions

1. Do not overload the boat.
2. Do not take chances with fire and explosion.
3. Do not tolerate an installation which lacks modern safeguards.
4. Do not allow gas or oil in the bilge.
5. Do not operate near swimmers in the water.
6. Do not allow rubbish to accumulate.
7. Do not make temporary repairs except in emergencies.
8. Do not use gasoline stoves.
9. Do not use kapok-filled life preservers to sit upon, as such action compresses the filler and destroys its efficiency.
10. Do not fail to provide life belts for children.
11. Do not be afraid of a boat—respect it.
12. Do not forget your wake can damage others.
13. Do not fail to reduce speed through mooring fields.
14. Do not fail to take precautions against fouling other boats when anchoring.
15. Do not lie at anchor with short cable; allow sufficient scope.
16. Do not fail to exercise sober judgment at all times.

Valuable additional information covering the various phases of safety in operation and maintenance may be obtained by contacting the Commander of your nearest flotilla of the Coast Guard Auxiliary. Complete information concerning all laws relative to motorboats may be obtained at your nearest Coast Guard District Office, Coast Guard Marine Inspection Office, or Coast Guard station or unit.

Let's make the 1951 Motorboat Season a safe one, so that pleasure boating can continue to be a safe relaxation from work.

# MOTORBOAT SAFETY

This is the Commandant's paper delivered at the 5th Annual Motorboat Safety Conference held in New York, on January 18, 1951

I am pleased to be here today for we meet to promote a common interest—maritime safety—particularly in the operation and maintenance of small boats. Therefore, with the subject duly noted, there remain only the definitions and clarifications provided through individual experience and interest.

The problem of safety is a deceptive one. It is as easy to plead for safety as it is to condemn sin. *Everybody* is for safety. Yet too many of us regard a safety program as we do statistics about the "average" man. The "average" man, you know, is a mythical being who does many amazing things year after year. He is full of faults and virtues. Yet none of us associate ourselves with the "average" man because we do not put ourselves in the "average" category. What he does is interesting, but ours is a special case, and therefore his experiences do not apply.

It is much the same with safety. On too many occasions safety is what the *other* fellow should learn and follow. No doubt it is this feeling of self-sufficiency and personal pride that would override the evidence where negligence is alleged and place the blame where it apparently belongs—and that is on the *other* person. This is the mental inertia that must be overcome before any safety program can be successful. Safety, as we all know, is an "All Hands" job.

Because you represent the pleasure-boat owner, the industry, the underwriters, and those who just have an interest in boats, I am sure you will agree with me that the Coast Guard has a definite role in your safety program. I use the word "definite" in the sense that there are limitations, whether imposed by regulation or by just good, common, ordinary horse sense.

Your first acquaintance with the Coast Guard could have come about in many ways. Among them your boat may have been boarded for the purpose of inspection, and, as a result, you may have been commended, warned, or even penalized. Perhaps you may have received assistance or you may have been rescued by patrol vessels or boats from a Coast Guard unit. You may have asked for advice or entered a complaint, or offered suggestions. As a corollary you may have seen our service acting to prosecute and defend members of the boating fraternity. Much like the policeman on his beat, it is our duty to enforce

the law. Such laws are intended to insure safety insofar as possible. Whatever the contact has been, whatever the association, it has been our desire to instill a confidence that in the long run we are working toward the same objective—your safety and the safety of others.

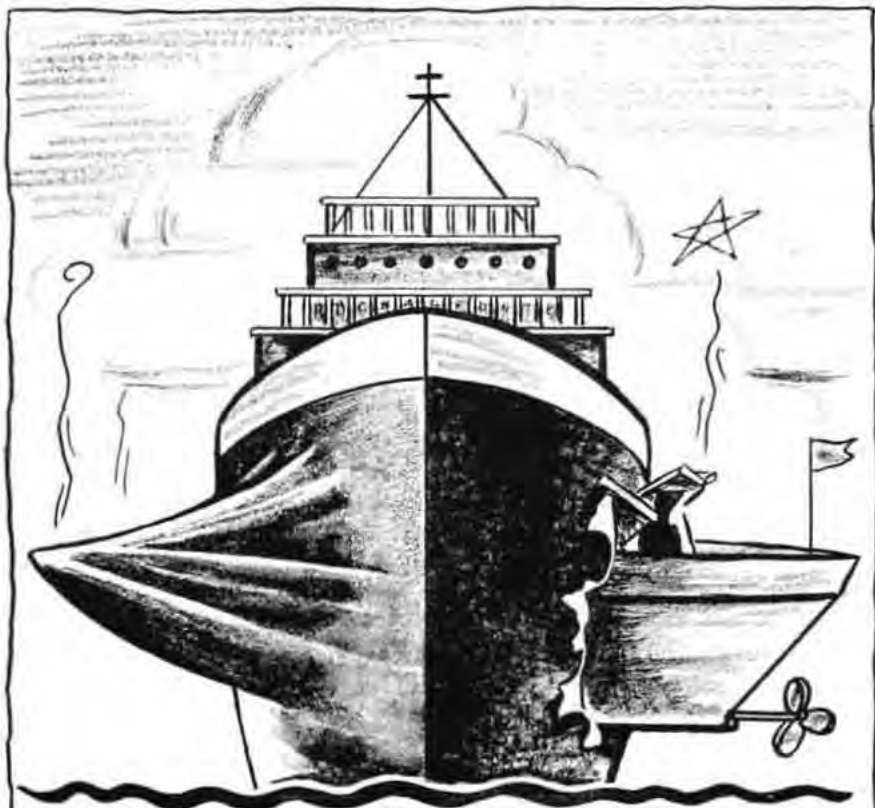
We always encourage initiative, ingenuity, originality, and interest whenever they are apt to promote safety.

Our relationship to the individual is more pertinent to this discussion. Safety is an all hands job. We take the view that our moral limitations

are in ratio to the willingness of the individual to help himself. The contribution of the individual is called "self-regulation."

We believe in self-regulation because true safety begins with the individual himself. If he knows what to do and plans it—and does it with a feeling of conviction, even if only self-interest is involved—then the problems become just a matter of collective voluntary compliance. This is a better approach than a policing which penalizes, but does not educate.

For this reason, I wish to congratulate the motorboat and yacht panel



Breathe ye a prayer for Captain O'Day  
He died maintaining his right-of-way  
He was right, dead right, as he sped along  
But he's just as dead as if he were wrong

of consultants on the splendid program inaugurating a code of minimum safety requirements for pleasure boats. This is the positive approach that is needed.

You know, pleasure boating is no small activity. Last year there were more than 455,000 numbered boats on record. Probably this figure could be doubled to include all, and the ramifications of all this movement, particularly in concentrated times and areas, and how these boats are equipped, maintained, and operated are something to think about. In 1950 the Coast Guard Auxiliary made some 15,000 courtesy inspections, and the regular Coast Guard boarded 11,000 more for routine inspection. Cases in which penalties were assessed totaled more than 3,000.

Yet the accidents and the casualties due to carelessness and neglect continued to increase. Reports made available to us showed 90 deaths in 1948, there were 153 deaths in 1949, and last year the total rose to 203.

Axiomatically as the number of boats increases, so do the chances for casualties. Therefore, because it is becoming more difficult for us to meet the increasing number of emergencies, distress calls, and disasters, we must turn to the boatman himself to share this growing responsibility. Casualties today are not distinguished especially by their variety. The lessons of the past appear difficult to digest.

For example, there was a cabin cruiser in Florida waters carrying four passengers for hire. Before its last trip, the operator had replaced a leaky gas pump. In the process gasoline leaked into the bilge. The bilges had poor ventilation. And what was to happen is obvious. An hour later at sea the cruiser was blown to pieces. Two passengers died from injuries and burns. There is more to such a case than simple cause and effect. It raises the question of responsibility of an operator of a boat-for hire to his passengers, the right of passengers to insist on some evidence of inspection, and finally the reaction of the public itself to the value of this kind of transportation.

The operator who runs his boat at high speeds in congested areas continues to make his contribution to the casualty record. Collisions, swampings, running over smaller boats and bathers, and just plain recklessness can never be explained away by faulty equipment.

Many casualties have shown that improper stowage of life preservers and fire extinguishers have been the direct cause of fatal accidents.

Only with your help in spreading

the gospel of self-regulation and common-sense safety will we be able to halt this growing record of needless death and destruction. We strongly urge industry to take a more positive attitude toward a more active program of "safety measures" in boating.

The Testing and Development section of the Coast Guard is presently experimenting with plastic boats and life rafts. Until exhaustive tests have been made little can be said regarding their successful outcome.

With the advent of Government controls over strategical materials it will be necessary for the industry to

develop substitutes to maintain even our present safety standards. The pleasure-boat builder of today may be the builder of military small craft of tomorrow, thanks to his ability to adapt himself to this change as we learned during World War II.

Gentlemen, in closing I want you to know that it is a source of satisfaction to the Commandant of the Coast Guard that there are leaders who think progressively, cooperate instinctively and, in the matter of small-boat operation, do not confuse liberty with license. You, indeed, are a source of strength. Best wishes to you all.

## MEETING THE CHALLENGE OF FIRE

Address by Charles S. Morgan

Assistant to the General Manager

National Fire Protection Association

Secretary, NFPA Committee on Marine Fire Protection

Presented at the Fifth Annual Motorboat Safety Conference

Hotel Shelton, New York

January 18, 1951

Whenever an airliner crashes, the executives of our airlines shudder. They know that quite apart from the direct losses that result, the whole industry has suffered a black eye and that canceled reservations and a slump in air travel will result. When there is a rash of crashes as has happened from time to time, air travelers and prospective air travelers stay away from planes and airline ticket offices in droves. The best efforts of statisticians and advertising experts are not enough to convince many people that air travel is safer than auto travel or walking the city streets. Their knowledge of perhaps only one crash gives them pause and causes them to reflect that, "I might have been on that plane." Or what is no less likely to happen: the wife issues an edict that henceforth "hubby" will please not jeopardize her happiness by flying anywhere, anytime. And most "hubbies" won't argue too hard or too successfully.

By the same token that every airliner crash is bad for the air transportation industry, so, too, every disastrous fire or explosion on a pleasure craft hits the motorboating industry in its pocketbook. The effects may not be so readily apparent as canceled plane reservations and empty airliner seats, but the effect is real nonetheless. Even when the industry is enjoying great prosperity, fires and explosions on pleasure crafts do nothing to keep the industry healthy, win no friends, afford no help to the sales-

man, and, in short, tend only to lose friends and alienate people.

What then are the facts of life (and death) about yachting fire experience? While only a fraction of the fire experience is ever reported, it is possible to arrive at some estimates that are doubtless pretty close to the truth. For 1949, the last full year for which figures are available, it is estimated that there were between 700 and 800 cases of fire or explosion on pleasure boats, representing a loss of about 2½ million dollars, perhaps 40 lives, and about 500 cases of personal injury. So far as can be seen at this time, the 1950 fire experience will not prove to be materially different except that fewer fatalities and injuries seem to have occurred. These estimates are based on data obtained from the Yacht Safety Bureau and our own Fire Record Department.

It is hardly necessary for me to tell this well-informed group what are the causes of these fires and explosions. Let it suffice to say that when the hazard of gasoline on motor craft has been controlled, the number of fires and explosions will be reduced at least 70 percent. The challenge of fire is constant and unrelenting. What are we doing to meet it?

Technological advances are constantly being made which provide us better means for stamping out the fire danger. Better metals for tanks and fuel lines, better-designed tanks, explosion-proof electrical equipment, combustible gas indicators and warn-



ing alarms, fire-extinguishing systems, more efficient power ventilation, bilge emulsifying agents, safer cooking and heating equipment, and many other developments, some new, some not so new, are available to us. Unfortunately however, many boats continue to be designed and built as if these advances had never been made. Capt. C. L. Clark discussed a number of such faults of design and construction in his excellent address to this same audience a year ago.

The challenge of fire is also being met on a broad front by such diverse groups as the United States Coast Guard, the underwriting fraternity, the National Association of Engine and Boat Manufacturers, the Yacht Safety Bureau, and the National Fire Protection Association. At previous motorboat safety conferences you have heard representatives from a number of these groups who outlined the nature of activities of each in its approach to greater pleasure boating safety. From time to time there have been allusions to NFPA and its Fire Protection Standards for Motor Craft. Perhaps the more curious among you may have wondered a bit about what this NFPA is and does and how it got into the act too.

One purpose of my participation in your program this morning, and what I feel sure was in the minds of those good enough to invite me to address you, is to explain something about this. The NFPA is among the older voluntary associations of the country, having been established 54 years ago. Its sole purpose is the reduction of loss of life and property by fire, an objective strictly in the public interest, and it has no ax to grind. The association is dependent for its support upon nearly 13,000 dues-paying members, upon the proceeds from the sale of its publications, and to a small degree upon funds contributed by a growing number of industrial firms in amounts ranging from \$50 to \$1,000 a year. I mention this because of the mistaken but widely held notion that NFPA is somehow a limb of the fire-insurance business and is subsidized by the insurance industry. This is far from the truth of the matter, however.

It may surprise many of you to learn that insurance interests currently represent only about 20 percent of our membership. The largest segment, constituting about 40 percent of the membership, is made up of industrial firms and other business establishments and their employees, while 30 percent is made up of fire chiefs and other municipal, State, and Federal officials. The remaining 10 percent is a miscellaneous group of libraries, colleges, independent engineers, architects, and so forth.

Few, if any, other organizations can point to so many national societies and associations among its members as can NFPA. There are about 200 such organizations including the American Institute of Architects, American National Red Cross, American Bureau of Shipping, American Petroleum Institute, American Insurance Syndicates, National Association of Engine and Boat Manufacturers, National Association of Manufacturers, National Safety Council, Shipbuilders Council of America, and others of no less diverse interests. We also enjoy the support of a number of departments and agencies of the Federal Government, including the Army, Navy, and Air Force, the Coast Guard, the Department of Agriculture, the Department of the Interior, and the National Security Resources Board.

The NFPA has two major functions. The first is the development of technical standards by which prevention of fire may be effected and losses from fire minimized. The second is in educating the public to recognize and stop the careless acts of commission and omission which cause so much needless waste and tragedy by fire. While the second is certainly no less important than the first-mentioned function it is perhaps of less direct interest to this audience and I shall dispose of it simply by saying that it is effected through all the media for reaching the general public; through posters, the press, magazines, radio, and TV and renews its vigor each fall during National Fire Prevention Week. Probably the most far-reach-

ing and influential development in this field of public education was the recent decision of the Advertising Council to undertake a national campaign on home fire prevention with the NFPA as sponsor. Everyone recognizes the various other public service campaigns conducted by the Advertising Council for the Red Cross Blood Donor Service, for U. S. Savings Bonds, for CARE packages and a few other similar campaigns. The Home Fire Prevention Campaign will be carried by national advertisers in all sorts of publicity media. The Texas Company has authorized Mr. Donald Stewart, manager of their advertising department, to serve as campaign coordinator and the National Advertising Agency, Erwin Wasey & Co. is contributing the time and talents of its staff in the preparation of the campaign materials. The campaign was launched in October and is designed to reach the mass public on a year-round basis with essential information on saving life and property from fire.

What is probably the prime function of NFPA, the job for which it was originally created, and the one which still occupies the major part of our time and resources; that job is the preparation of fire-prevention and fire-protection standards. This is effected through the organization of technical committees made up of the best talent available and representing all of the major interests likely to be affected by or interested in the standards. We now have more than 60 such technical committees working on fire-protection standards for most everything from air conditioning to truck transportation. Once developed, a standard must be kept up to date, so that only rarely does a committee find its work completed.

In the beginning, the early standards developed by NFPA were designed primarily for use by the fire-insurance business, but this has given way to the development of fire standards for the public benefit. It is not surprising that the fire-insurance industry is widely represented on our committees, particularly since they have the largest reservoir of qualified engineering talent, since they are in a better position than most to appreciate the enormity of the fire problem, and since in a great many cases their interests parallel more closely the public interest than any other source of qualified committee personnel.

So far as NFPA is concerned, these standards are purely advisory, and no attempt is made by NFPA to enforce them on anybody. Because of the competence and representative nature of the committees which draft



NATIONAL SAFETY COUNCIL

Time saved  
at the price  
of an  
Accident is

NO BARGAIN

them and the democratic process by which they are adopted by the association, these standards do enjoy a very broad acceptance and are widely employed not only for fire-insurance purposes, but also as the basis of law in many States and municipalities or as regulations of the fire marshal having the force of law. Thus, they do serve a practical and useful purpose. I suppose that the National Electrical Code, which is prepared by a committee of NFPA is the most widely observed standard in the country. Our liquefied petroleum gas standard is universally accepted throughout the country as the guide to safe practices in the storage and use of butane and propane and is the law in many States. Both the electrical and LPG industries are squarely behind NFPA, in the promulgation of these standards, and would, I am sure, be among the first to acknowledge the benefit the standards have been, both in the interest of public safety and in the security of the industries affected.

It would be difficult, if not impossible, to point to so large an aggregation of high-priced technical talent serving without compensation or even reimbursement of expenses as is represented by the committees of NFPA. The services of these experts constitutes a magnificent contribution to the public welfare by their employers.

It is not my intention to tax you with a recitation of all of the many ways in which NFPA extends the gospel of fire prevention and fire protection, but rather to point up what we are doing in the marine field and more specifically in the field of motorcraft fire safety.

The association has a committee project on Marine Fire Protection which dates back to 1917. The present set-up consists of a General Committee under the chairmanship of Tom Torrey, of the Insurance Co. of North America, Marine Department,

and composed of representatives of the principal interests, associations, and Federal agencies concerned. The General Committee acts somewhat as a governing committee to five technical committees each dealing with specific phases of the over-all problem and each composed of appropriate representatives having special technical qualifications. There are working committees on Shipbuilding, Repair, and Lay-up; on the Operation of Marine Terminals; on Harbor Emergency Organization; a committee on Gas Hazards on Vessels to be Repaired, sponsored jointly with the American Bureau of Shipping, and last but certainly by no means least, a Committee on Motor Craft and Marinas. This committee is under the able leadership of our genial chairman of the morning, Ed Terwilliger. Ed is a modest fellow but even at the risk of making his ears burn, I welcome this opportunity to express to his peers here assembled, the gratitude of the NFPA and its most genuine compliments to him for the leadership and inspiration he has given to the Motor Craft Committee since becoming its chairman in 1948.

Perhaps you would be interested in knowing the other able men who constitute this committee. They are: Mr. Charles Chaney, whose special forte is marinas; Joe Choate, who, as secretary of the National Association of Engine and Boat Manufacturers, hardly needs to be identified to this audience; Capt. C. L. Clark, of Chubb & Son, whose keen perception and long experience as a marine surveyor make him a most valuable asset; Mr. Henry Gells, expert on marine electrical matters; Wm. Edgar John, of Rye, N. Y., who gives the committee the benefit of his vast experience in servicing all manner of craft; Mr. Jack Loeser, of Appleton & Cox, a surveyor of broad experience, who has served on the committee for more years than he cares to remember; Mr. Herbert Prior, representing the boat-owning public as expressed through the U. S. Power Squadrons; Commander Paul Savonis, of the Coast Guard; that dean of marine surveyors, Jack Smith, of the Marine Office of America, who has behind him nearly 30 years of distinguished service on NFPA marine committees and who is also vice chairman of the General Committee on Marine Fire Protection; Mr. George Smith, of the American Bureau of Shipping; Mr. J. W. Stanley, of the E. J. Willis Co., the committee's expert on accessories and fittings; Ted Wright, of Underwriters Laboratories; Mr. Harry Townsend, of the U. S. Salvage Association; and Mr. W. N. Zippler, of Gibbs & Cox, who helps keep the committee out of the rough on electrical and other matters. In addition to

these official members, the committee has been zealous in seeking and obtaining the advice and opinions of many other leaders in various branches of the industry.

Those are the men responsible for the development of the 1950 edition of our "Fire Protection Standards for Motor Craft." I expect most of you are familiar with this booklet, but I have brought down a few copies for any who may be interested to have one. The Motor Craft Standards, like other NFPA standards, are designed as a reliable guide to practical fire safety. They don't seek the moon, but represent a reasonable compromise between the ultimate in fire protection and the economic facts of life.

In the Motor Craft Standards there are recommendations applying to the hull engines, fuel systems, cooking, heating and auxiliary appliances, electrical systems, fire-extinguishing equipment, and operation and maintenance. While not to be classed as light reading, the standards are arranged in orderly fashion and are easily understood. For the boat builder who does not build just for today and who recognized that the future of the whole industry depends upon the confidence of the public, and for the boat owner who values his property and his skin, there's a lot of helpful guidance.

Now, nobody appreciates better than I do that merely getting a standard on paper isn't going to prevent many fires. Unless and until the printed word is translated into effective action, there is no real gain. I am happy to say that the current edition of the Motor Craft Standards has had far wider distribution than any previous edition. Eight thousand copies have been distributed since the Standard appeared in June 1950. Through the good offices of the Yacht Safety Bureau, complimentary copies were sent to members of the National Association of Engine and Boat Manufacturers, surveyors, service yards and marinas, to every Power Squadron commander and safety officer, and to every Coast Guard Auxiliary commander. Where we are weakest is in getting this Standard into the hands of the boat-owning public. To a degree this is offset by the wonderful distribution that has been made of Yacht Safety Bureau's pamphlet on Fire Safety Fundamentals which is based largely on the NFPA Standards. Ed tells me that in the past 2 years, 185,000 copies of that pamphlet have been distributed. I believe that for the most part these have gone to boat owners.

From the very outset of its activity in the field of motor craft fire protection the NFPA has enjoyed the full support and cooperation of the Na-



tional Association of Engine and Boat Manufacturers, a friendly relationship which we acknowledge with deep appreciation. The first chairman of our Motor Craft Committee was Mr. A. E. Luders who was the official representative of the Engine and Boat Manufacturers Association on our committee. Up to the time of his death, Mr. Ira Hand also gave of his talents to NFPA Marine activities. In fact, he was instrumental in organizing the NFPA Committee on Marinas which developed a standard for the location, construction, and protection of marinas, a function now absorbed by the Motor Craft Committee under the chairmanship of Ed Terwilliger.

Incidentally, Ed's committee is currently busy revising the old marinas standard and also has in preparation some recommendations for the fire protection of yacht service yards. The committee hopes to have these two projects ready to submit to the NFPA for adoption at its annual meeting in May.

How is all this standard-making function of value to you? Why should it be of interest to you? How does it merit your support? There is more than one good answer to these questions.

To begin with, it is an important part of a conservation program; a sorely needed concert of effort to save lives and property from destruction by fire. It is humanitarian to save innocent lives even from the destructive effects of their own carelessness and ignorance. It is economic folly to stand by without lifting a finger to stop the waste of our material resources caused by fire. Notwithstanding the notion that seems to be held by a surprisingly large number of unthinking people, insurance can never restore life or recreate that which has been consumed in flames. The average American family paid over \$23 last year for its share of the national ash heap, or nearly \$5 for every man, woman, and child in the country. Most of us find tax-paying no special pleasure so we should be glad to reduce the fire tax however we can. That's the only thing the NFPA is struggling to do.

This work merits your support because fire and explosions on boats are bad for the industry. Fires are like a drug being towed; you may make some progress in spite of it, but, get rid of it and you'll go farther and get there sooner.

"All right," you may say, "but how does the particular effort of NFPA in this motor craft field merit our support?" I would reply that the standard-making function of NFPA in this field merits your support because it

has its origin in qualified competent committees, with full representation and participation by the industry, because the committee recommendations become standards only through an orderly and democratic process in which full opportunity is afforded for expression of minority opinions. Because it is in fact an expression of the principle of "self-regulation" by industry. The machinery is established, enjoys an enviable reputation throughout the English-speaking world, and has a proven record of accomplishment over a long period of years.

In his address to this group last year, no less an authority than Admiral Shephard of the Coast Guard who, I am happy to say, had participated in NFPA committee work himself for many years, expressed the hope that the entire industry would pull together in the development of safety standards, pointing out that in

falling to do so the Federal and State Governments might be tempted to inject themselves still farther into the matter. He said, "I believe that self-regulation is the best answer." Few among you, I feel sure, would take issue with that philosophy.

I am confident that the day will come when every reputable designer and builder of power boats and every service yard and marina is thoroughly familiar with the Fire Protection Standards and makes a conscientious effort to be guided by its recommendations, and when every prospective boat owner will insist that the boat he buys meets the Standard in the same way that he now insists that his household appliances be "approved" by Underwriters' Laboratories. The sooner this day arrives the better it will be not only for the boating public but for every member of the boating industry. I solicit your personal cooperation to the end.

## "THE UNDERWRITERS' CONTRIBUTION TO SAFE BOATING"

Address by Mr. John Armstrong, Jr.

Insurance Company of North America, Philadelphia, Pa.

Presented at the Fifth Annual Motor Boat Safety Conference  
Hotel Shelton, New York, January 18, 1951

I have a feeling I am going to be a little bit of a disappointment to those of you who were here last year and listened to Mr. Bjorness' vivid word picture of a typical underwriter, a middle-aged, codfish-eyed individual, regal and angular in appearance. However, as Mr. Bjorness also said, the underwriter is destined ultimately to spend his eternity roasting in the nether world. It has been suggested on numerous occasions that I visit them there and that I ultimately may fit into the picture.

Actually, what I want to talk to you about today is not an individual underwriter or any organized group of underwriters but the marine insurance industry as a whole and how it has through a great many years thrown its very considerable weight into the fight for safe boating.

Without getting into the hazy question of what part of a business organization's motives is pure public-spiritedness and how much of it is self-interest, we can, I think very reasonably look to the net result to evaluate its efforts and find out how much good really is done.

There is, in the insurance industry's operations, a very close coincidence of public and private interest.

We share with the community in a very tangible way the full benefit in loss prevention activity, safety education, and the various influences exerted by the underwriter in his evaluation of risk.

I should make it clear at the start I am not trying to defend an industry which has, I understand, a very difficult public relations problem, somewhat like an undertaker and an exterminator, being associated intimately with unhappiness. While it may appear at the start as though I were backing up to this subject, I would like first to describe the underwriter's important but indirect influence on safety. It is unspectacular and it is only apparent over a long period of time. Consequently, it is not normally appreciated despite its real force.

Boating is an entirely unique pastime. It is purely a participation sport and it requires a tremendously high investment for that participation. I am very firmly convinced that higher unit values are found in yachting or boating than in any other widespread form of activity. It is highly unlikely, I am sure, that such investments would ever be made without the protection insurance does af-

ford. By contracting to indemnify the boat owner for the cost of losses fortuitously suffered by his boat and by insisting upon amounts of insurance which are proper in all respects the underwriter adds a very comfortable sense of security to the pride that goes with boat ownership. The prospect of repair and replacement becomes, in effect, a promise, and a long step has been taken toward assuring the future of the sport.

By acquiring, in this way, continuity and stability, the sport continues to expand, enabling its popularity to include the great mass of American men and women who, though they may have the inclination and the facilities to enjoy boating, would otherwise be frightened away by the fear of sizable unsecured investments.

Now a stable, long-range desire to own and enjoy marine property, free from the dread of financial loss, brings serious, discriminating, substantial buyers into the yacht market. Their sights are set on good, well-found boats, and boat and equipment builders can and do meet a market of this quality with top-grade products. Of course, that oversimplifies a complex economic process and I sense that among the manufacturers present there is a certain amount of bristling at the suggestion that all they have to do is to have a yacht underwriter hovering outside the door with a blank pad of yacht policies to sell any product regardless of price. It is not quite so simple as that. There are painful time lags and a multitude of extraneous factors which do distort the picture tremendously. I feel, nonetheless, that it is safe to stand firm on the contention that removing the buyer's fear of unsecured investment measurably improves the size, continuity, and general quality of the market, and the builder of boats and engines and miscellaneous equipment is thus enabled more closely to approach his own serious objective—the production of high-standard boats.

This is the basic contribution of insurance to the processes which lead to safe boating. There is a more obvious and consequently more popular aspect which every manufacturer certainly knows and most boat owners are familiar with—the underwriters very flat insistence that the boats be sound and safe as a prerequisite for insurance. The requirements are admittedly quite severe and much more demanding than the law, which must of necessity be more on a minimum basis. But they are not arbitrary standards, as many boat owners would have you believe.

I doubt that any group knows more about why losses happen than the marine insurance industry, which has, over the years, paid, analyzed, and

classified millions of dollars' worth of them.

The business is a statistical one in any event, and when this vast systematized experience such as no one else, I am sure, could accumulate, has the benefit of technical interpretation, such as we get from the NFPA and such, there can certainly be no accusation of arbitrariness when a set of strict standards results.

Learning why a loss occurred is the first real step toward its future prevention, and I am convinced there is no one who can offer more help here than the fellow who investigated and paid the loss.



Yacht underwriters are not in the boat business, we must repeat again and again. They neither recommend boats nor condemn boats, but they do reserve one very basic right, the right to decide for themselves what is insurable and what is not insurable. Actually, their positive, intended influence ends here, but a sequence has been started, a natural screening process gradually ridding the market of poorly engineered, unsafe equipment. Manufacturers themselves are certainly aware of the importance of insurance in their own financial setup, know, or very soon learn, that they cannot build a business on an uninsurable product. They are faced, then, with withdrawal from the market or an adjustment of their standards to comply more nearly with those developed by underwriters in their own and hence the public interest. This same influence, of course, is felt in devious ways by boat yards, storage facilities, repair facilities, because they first have to satisfy their direct underwriters by a reasonable

demonstration of safety-consciousness. Then when the underwriter on specific boats continues actively to resist craft patronizing unsafe yards, a further force is exerted for improvement in the yards.

So far I haven't said anything about the leading man in this scene, who is really the most important factor of all, the unsafe boatman himself, the individual whose heroic disregard for life, limb, and property, even his own, wastefully demands so much from Coast Guard personnel and equipment. He is a disproportionately large contributor to the Nation's annual toll of marine losses and remains as much of an enigma to the underwriters as he is to the long-suffering Coast Guard who devotes so much time protecting him from himself. As a rule, his unsafe practices are not malicious or intended, but just thoughtless. Few boatmen, I am convinced, are completely irresponsible, completely unwilling to recognize the fact that they have in their hand a lethal weapon. Consequently, the problem is not entirely incapable of being solved.

Underwriters do take a shot at it. They try, through loss-prevention material, original underwriting surveys made at the time the coverage begins on the boat, discussions in connection with frequent preventable losses, to familiarize the boat owner with the nature of the forces harnessed in his boat and the accepted means of controlling them. The boat owner himself has infinitely more at stake than the underwriter, whose only ante, of course, is money. He is usually pretty quick to perceive that he has a tremendous stake, his family, his wife, his future, everything, while the underwriter has only to write out a check.

Should it become apparent, however, that the effort and cost of his education in a particular instance is fruitless, no choice is left but to advise the unsafe boatman that the risk can no longer be considered insurable.

I know in my own experience that underwriters are very well aware of the fact that they have put an awful lot of boatmen through college, so to speak, contributing very generously in propeller shafts, ground tackle, and miscellaneous planking and paint jobs. Again, so far as my own experience goes, our adopted students generally do pretty well by us and eventually graduate, even with honor sometimes. Those, however, who through lack of inclination to learn repeatedly flunk their major subjects, shortly have their allowance cut off and they are adrift on their own.

Many individual underwriters—I am speaking not of the industry but



of the people like me who earn a living at it, after a fashion—are themselves boatmen. They are very close to their subject matter. I doubt if in any other type of insurance the underwriters are closer to the subject matter, the actual business that they are doing.

I myself was a boat owner until I traded the boat in on a wife and two children. That is a gradual process, not as simultaneous as it sounds.

And I know that all of us who do understand boating and spend a lot of time at it can picture in their minds the depressing sense of insecurity which would come from losing the protection of our insurance, our anchor to windward. The withdrawal of this comforting protection or the inability, for underwriting reasons to obtain it, is a tremendously powerful deterrent to dangerous, irresponsible practices afloat. It is again an aspect of the screening process which has helped to weed the unsafe boats and equipment out. Unintentionally, the result is to weed out the unsafe boatman.

Since I have already injected myself into this discussion, I would like to add in refutation to the claim that underwriters are a stony-hearted, inhuman lot, that my own boat was insured in a competitive company because I hadn't the heart to underwrite myself honestly.

The impression should not be gotten that the withdrawal of insurance is an automatic penalty based purely on the cost of losses paid. There is a world of difference between the unfortunate owner who takes three successive gales over his transom and the one who burns up his engine three times getting off the same mud flat or has three collision claims against him in a single season. The decision to cancel is based on the cause, not the cost of the losses. It is a very honest attempt—and I say this professionally as well as personally—to be fair, to protect those who, through no fault of their own, suffer loss, rather than to hold an umbrella over those who regard insurance as an easy substitute for care and the exercise of judgment.

Although it is not actually a positive, physical force for safety, one further service is performed by the insurance industry and I think it is a very important one, rendering the boat owner financially responsible by indemnifying the general public for damage suffered through his negligence or misdeeds. The protection of the innocent bystander very definitely forwards the public interest and in so doing, of course, becomes an integral part of the continuing campaign for safe, intelligent boating which concerns us all today and all of the time.

## SAFETY MEASURES IN MARINA CONSTRUCTION AND OPERATION

Address by Charles A. Chaney  
National Fire Protection Association

Presented at the Fifth Annual Motor Boat Safety Conference  
Hotel Shelton, New York  
January 17, 1951

Safety is a relative condition, contingent upon knowledge of the causes of disaster and of the means of preventing them. Progress in safeguarding lives and property should accordingly increase as our knowledge and alertness increase.

It would be difficult to determine when man first thought of protecting himself and his physical possessions from the dangers which surrounded him. Our scientists and historians record that the ancient Egyptians and Romans and our medieval ancestors were safety conscious and took protective measures within their means against their major dangers.

Our immediate forefathers, however, were the first to realize the benefits to be derived from adequate safety measures based upon definite plans of action. They were pioneers laying the foundation for our present-day accomplishments. Many of us can still remember the days when machines were manufactured with exposed gears and other dangerous moving parts. We can also recall some power boats, dockage facilities, and repair shops which would cause consternation if in use today. Recently, progress has been remarkable but much is yet to be accomplished if we would reduce property damage, personal injury, and loss of human lives to a minimum. It is up to us of the present generation to call upon our vastly increased knowledge of the sciences and our improved engineering methods and procedures to continue this age-old safety program.

Safety measures provided in existing marinas throughout the country vary greatly in nature and extent. Some of the basins leave little to be desired while others provide only what is required by law. This disparity is probably caused by a number of factors among which are—lack of knowledge of the benefits to be derived, lack of available funds for improvements, failure to realize the danger of familiar conditions, and last but not least, the fact that too little serious thought has been given to the subject.

Before proceeding further, let us summarize some of the basic facts and their significance.

(1) Expenditures for the provision of safety measures do not produce di-

rect income and accordingly they are too often postponed.

(2) Adequate safety measures result in numerous indirect benefits among which are protection of property, reduction of amount of lost time, prevention of personal injury and loss of life, reduction of claims for damage from various causes, increased patronage, more favorable consideration by insurance companies, and the enhancement of the standing and reputation of the marina.

(3) The protective measures provided should cover buildings, docks, equipment and boats, and every reasonable step should be taken to prevent personal injury and loss of human lives.

(4) Hazards which cause most of the property damages and personal injuries are included in one of these classifications: Forces and processes of nature; fire and explosion; and, other hazards due to improper planning, carelessness, neglect or otherwise brought about by acts of some individual.

The foregoing general classifications can readily be broken down into numerous items which apply to most marinas. Additional items of equal importance must be considered when required at a particular site. Every item, condition, or structural unit which endangers property or the lives of those in the marina should receive serious consideration and its particular degree of risk ascertained. The elimination of all hazardous conditions would be ideal. This unfortunately is not practicable, but every effort, within the limit of available funds, should be put forth on corrective measures, particularly where an extreme or continuous risk exists.

All hazardous conditions are subject to improvement, some to a greater degree than others, regardless of their nature. Careful planning of the marina often avoids the creation of conditions detrimental to the safety of property and lives. The quality of construction materials, processes, and workmanship has a direct influence upon protection gained. Competent management of the marina with adequate maintenance is also an essential factor. Safety during construction, being a responsibility of the con-



tractor, will not be discussed in this paper.

It is probable that an active marina contains a larger variety of hazards than any other business enterprise that we normally encounter. The yards and shops are stocked with combustible lumber and boats. The presence of gasoline, oils, acids, and dust are conducive to explosions. Extensive electrical wiring systems are possible sources of sparks capable of setting off an explosion or starting a disastrous fire. Electric lines in proximity to water are necessary installations, but are extremely dangerous. Machinery and equipment required for the operation of the facility are sources of danger. The waters of the harbors unquestionably have caused many injuries and claimed a number of lives. Even nature, through the media of floods, waves, wind, and ice, contributes toward the total loss and destruction.

Comparative figures for property damage, personal injury, and loss of life caused by each of the hazards within the several classifications are not points at issue, therefore no attempt was made to determine them. However, it is believed that those due to fires and explosions stand near the top of this infamous list, and unquestionably they are the most feared of all calamities within the marina.

The importance of guarding against fires and explosions is recognized by governmental bodies and many private groups. The United States Coast Guard Service, State officials, and local port authorities have formulated regulations on this subject. Such groups as the National Board of Fire Underwriters and the National Fire Protection Association have published numerous papers and booklets which describe the latent hazards and the remedial measures most suitable in each case. It is strongly urged that those responsible for the safety of any marina, obtain copies of these publications which are available at nominal cost. These papers include recommendations concerning construction materials, general operational procedure, manufacturing and repair processes, handling of inflammable liquids, storage, and over-all maintenance. They also describe various available methods and types of equipment for preventing and fighting fires including alarm systems, extinguishers, sprinklers, and the services of municipal fire departments. The papers referred to are very complete and discussions of them in this talk would be a repetition.

With respect to the many other sources of danger in the marina, your speaker knows of no text which attempts a complete coverage of this

broad subject. Long tedious studies of numerous publications and extensive interviews with experienced operators would be necessary if one were to accumulate complete data on the nature of these hazards and the corrective measures. A booklet devoted to descriptions of these hazards, other than fire and explosion, would make very interesting reading and possibly could be the basis for eliminating some of the present property losses and personal injuries. It is not possible to discuss this subject completely in a short talk. In lieu thereof, these hazards and some suggested cures during planning, construction, and operation will be only briefly mentioned. The details will vary considerably as required to meet local needs.

The planners and operators of marinas each have a responsibility in protecting property and lives against the destructive elements which are ever present in these locations. Many of the hazards can be minimized or possibly eliminated by careful planning and construction. The operator is in position to further reduce the risk of losses from these causes. Let us first consider the benefits which might be derived through careful planning and construction of the marina.

In the books and papers previously prepared by your speaker, the necessity for selecting the most suitable site has been stressed consistently and one of the most important reasons is to secure protection against the forces of nature. Waves, floods, hurricanes, and ice jams, contingent upon their severity, are very destructive. The frail docks, floats, and boats, and at times the structures on shore are often damaged by the elements, and in some localities complete destruction has resulted. It is not practicable to construct marinas to withstand these forces when exposed to severe attacks. Breakwater structures can be built to withstand small waves and reasonably small floods, but protection against high waves and raging floodwaters could be obtained only at costs not usually justified. Sturdy ice breakers offer reasonable protection, but only against moderate amounts of ice traveling at low speeds. We have no barrier against hurricanes, as some of our friends in other localities will attest. Planners generally realize the severe damage which can result from these forces and so locate the structures that the exposure will be the least severe, thereby reducing the risk.

Nature provides some additional enemies which destroy much valuable property. These are termites, marine borers, and decay. Experience proves that the use of well-selected materials

and material treatments, at reasonably additional small cost, greatly prolong the usable life of structures and reduce the risk of personal injury.

When planning the marina, whether of the club or the commercial type, the various facilities should be well dispersed. This applies particularly to the areas used for fueling, painting, paint storage, welding, woodworking, storage-battery charging, and similar activities in which there is a definite risk of fire or explosion. Areas to be used for storage of boats, lumber, or other combustible materials should be located at a safe distance from active yard or shop areas subject to fire risk. Fueling operations entail a recognized hazard. Accordingly, good practice is to provide this activity outside of the slip area or to definitely bulkhead the fueling area to prevent floating fuel from spreading to the slips.

Many injuries to persons, at times, are caused by tripping or slipping while using the walkways, docks, shops, salesrooms, and even the open yard areas. The planners can relieve this condition by providing adequate widths to all walks, avoiding slopes and steep stairs, and specifying roughened surfaces when their use is indicated, especially at locations in which visitors are anticipated.

When planning structures, it is advisable to design all members to safely support the loads contemplated, because a failure may result in costly property damages or the injury or death of one or more persons. Non-combustible materials should be used for shops and storage of flammable materials and elsewhere when funds permit. Structures should conform to the provisions of a recognized building code. Gasoline storage underground is a wise provision and a few extra precautions such as placing fire stops at intervals under the timber walks are well worth their cost. The planners can also add much to the safety of the marina by providing adequate lighting, guard rails at dangerous points, a reliable fire-alarm system, and sufficient water supply lines for fire-fighting purposes.

It may have appeared from the foregoing that most of the responsibility for the safety of the marina is in the hands of the planners. Actually, the manager of the completed unit has an equal burden on his shoulders. A poor quality of maintenance and operation on his part can nullify many of the safety features provided by the planners. In addition to utilizing the facilities furnished him, the operator has the duty of providing the necessary safety equipment and organization to complete the basic program. It must be

remembered that unless the management directs the safeguarding of life and property or designates someone with full authority for this duty little or nothing will be done. We may expect satisfactory results only when a well-planned safety program is initiated and followed.

It is suggested that the operator's program be based upon the five items given herewith:

(1) Determination of requirements, (2) installation of equipment, (3) organization of personnel, (4) house-keeping, and (5) educating boat owners and visitors. These items are all important to the safety program, and the order in which they are given should not be interpreted as an indication of their value. Let us consider them in order.

It is almost invariably true that the accident least expected is the one which occurs, and the operator therefore must be prepared for any eventuality. One step is to have immediately available a complete list of telephone numbers and addresses of nearby fire and police stations, hospitals, utility company offices, doctors, and key personnel and others who may be needed during an emergency. A complete inspection should be conducted throughout the marina and all conditions which appear hazardous in any respect should be carefully noted with the indicated improvements.

Exposed machinery needs to be covered and electrical fittings and wires which may either set off dust explosions or shock someone, should be changed. Hand railings and guard rails are worth-while installations. Ample, protected operating space is a necessity around machinery and at points where work is performed. Safe access must be allowed to the boats. Walk surfaces should be unbroken, and roughened especially on slopes. First-aid fire-fighting equipment conforming to the regulations of NFPA should be purchased and installed in cabinets at critical but convenient positions, with a good first-aid accident kit available. Boats suitable for rescue purposes and for use as tugs in emergency should be stationed at convenient places and ready for use at all times. High fences around storage areas will aid in protecting property against fires and other depredations. An orderly arrangement for storing materials, parts, and accessories, such as a system of racks, shelves, and bins, if consistently used, is of much aid in preventing minor accidents. Fueling systems installed with a full complement of safety devices are advisable. It is suggested that consultations with the local fire, police, and building inspection departments might prove helpful.

Another item of importance is the

assignment of duties to members of the organization. Two very valuable groups are a fire brigade and a safety committee. The men in these groups should be trained in the proper use of all equipment and in the early detection of danger to persons and property. The night watchman is also of greater value if reliable and thoroughly experienced in the use of all equipment, and he must be able to exercise good judgment and call for the appropriate aid in time of need.

Keeping the entire marina in first-class condition is quite a chore but the benefits are worthy of the effort. Some of the more important items are repair and repainting, keeping the stock in order, removing debris, cleaning oil and grease from walks, floors, and other hazardous places, maintain-

ing all equipment in first-class condition, seeing that all walks and docks are kept clear of debris and gear at all times, providing safe lighting at night, posting warning signs as required and rigidly enforcing regulations. It is highly important to avoid crowding of boats and blocking of navigation channels as these would reduce safety during emergencies.

The manager cannot carry out an effective safety program without the cooperation of boat owners, visitors, and his own employees. This matter must be handled diplomatically through personal discussions, warning signs, and similar methods. One effective means is the printing of some of the more urgent regulations on the reverse side of leases and some stationery.



BuEmployComp



We are painfully aware of the present national emergency. There should be no easing in the enforcement of safety regulations at this time, in fact it behooves us to be even more careful in safeguarding lives and property. Past experience has proven the value of small pleasure boats and marinas in our defense system, and restrictions on the use of critical materials for certain purposes

may eventually curtail replacements. The best of care should therefore be taken of the facilities now on hand.

Safety in marinas is an ideal which is attained only as a result of research, hard work, and careful planning. Serious thought should be given now to the safety of marinas to be built either as part of our national defense system or for formal use in the peaceful days to come.

## MARINE GROWTHS

Address by Dr. William F. Clapp  
of the William F. Clapp Laboratories

Presented at the Fifth Annual Motorboat  
Safety Conference, Hotel Shelton  
New York, January 18, 1951

I am delighted to find the Coast Guard so well represented here because it gives me an opportunity to say that what success I may have had in benefiting the owners of marine property of various kinds; boats, wharves, and docks; what success I may have had has been due to a great degree to the help and assistance I have had from others. And I believe that of all the help I have had most has come from the Coast Guard. I am deeply indebted to the Coast Guard for having helped me for more than 30 years in many of the problems I have been interested in.

It was rather remarkable to hear just how we might have contacts with the Coast Guard. In time of danger we might be rescued or we might be boarded for inspection. I think I have been through everything.

One of my earliest escapades was being seized in my schooner, 50 miles off Portland, as a rum runner at 2 o'clock in the morning. Somebody saw the name of the boat—it was a hundred-foot schooner—called the *M. M. Hamilton*, a research laboratory. We had difficulty in explaining that to the Coast Guard people, just what a research laboratory was—it sounded fishy anyway.

At any rate, knowing the name, they soon found out who the owner was, and I received newspaper clippings from all over the United States: "M. I. T. professor seized running rum, 50 miles off Portland, Maine." I had a hard time to live that down, and I think some people even today think I really was.

The real satisfaction I had that night—I can't tell the whole story because of Captain Barnes, captain of the *Chicopee*. Of course, I argued through the megaphone that I didn't have a drop of liquor on board of any kind, this is a research laboratory. That didn't do any good, but going

into the harbor there was a very heavy tide there and in trying to get this big schooner safely moored I succeeded in putting the bowsprit through the *Chicopee*. I busted up three plates and that didn't hurt my feelings a bit. So we have been grand friends all of these years and they have helped me tremendously.

A great portion of our work has to do with finding out just what destructive organisms there are in various harbors. In order to do that we put out test boards which are operated all over the world. I have them in Persia, and in Tel-Aviv, and Haifa, Egypt, the Mediterranean, Greenland, Newfoundland, Nova Scotia, way down in Brazil, the Philippines and Japan, and all up and down our coast. Many of those are operated by the Coast Guard for me. The samples are sent in every month. Some of those tests have been operated for 12 to 20 years continuously, so I have an excellent idea of just what is going on in hundreds and thousands of harbors.

The Coast Guard has maintained for me test boards on practically all of our lightships. The data that I have been able to accumulate from those tests is of tremendous value. We have discovered that these very destructive organisms are plentiful at least as far as 50 miles off the coasts. A 4 by 4 timber placed in the water by some of these lightships, for example *Nantucket* or the one off the coast of North Carolina, will be totally destroyed in 4 months, some of the organisms having obtained a length of 2 feet and as large as my thumb. That brings up the problems of how do they get there and also gives us a clue, something to work on, which might explain why some harbors suddenly have a destructive infestation.

If every cubic foot of water off our coasts for a distance of 50 miles is

filled with the embryos of these organisms, steady strong winds, currents, and tides might conceivably bring them into such harbors as Salem, Mass., or Beverly or Corner Brook, Newfoundland, or Sidney, Nova Scotia. A harbor which may have been immune from attack for many years may suddenly have a very serious infestation. That is what we have been working on for so many years and that may be the explanation of these so-called cycles.

There are two groups of organisms that cause trouble. First are these borers that I have been describing, the marine borers. They cause severe destruction. We did some work for the British Navy during the last world war. In the correspondence I found data that at one scene of activity 40 percent of the wooden boats, small craft, were destroyed by the marine organisms before we had a chance to use them. Such losses are much greater than people realize because, as a general rule in craft like that, when it is destroyed or damaged badly and is no longer useful, no effort is made to diagnose the cause. In fact, I have seen boats that were brand new, had only been in the water 4 months, completely destroyed, and the verdict was it was due to dry rot. I have seen that happen many times. So the real causes are not well known.

We have seen samples of planking or cut-up portions of a boat, keels, propeller boxes, all sorts of things the bugs will attack and destroy. Those samples are sent to the laboratory so that we have, perhaps, a better idea of the amount of destruction than the average person. There is that group, the destructive one. Then there is one other group that causes a great deal of trouble. Those are the fouling organisms, the ones that grow so rapidly on the bottom of a boat that in a few weeks the boat will be so well covered with marine growth that it can no longer maintain its speed or has to use an excessive amount of fuel.

During the war many boats were dropped out of convoys being unable to keep up speed because of fouling organisms. One such boat was right here in New York Harbor. It had to be tied up off Staten Island, the anchorage, for about 4 weeks. It had just received a coat of a very excellent antifouling paint. When it picked up the convoy and started it had to drop out at Nova Scotia; it was ordered to drop out and return to port. It was drydocked and there were a great many tons of organisms which had grown on that boat during that brief period of anchorage. That was not the fault of the paint; the paint was not designed to be subjected to that sort of service. It was designed



to protect while the boat was under normal usage in motion. Stopping in a spot of that sort, the paint was not efficient.

Our work is first to attempt to obtain improved materials for protecting wood against the destructive marine borers. Such materials are being improved all of the time.

The second is to improve the anti-fouling marine paints to prevent fouling up. I have been very closely connected with the Coast Guard on those tests of plastic boats and just returned from the test station at Wilmington, N. C., after inspecting some of the Coast Guard tests on these plastics. There is no reason that I shouldn't say right here I think they show wonderful promise. I think they are going to be of tremendous value.

These materials for protection against the troubles: we have them; excellent materials for protecting timber against the destructive borers; excellent antifouling coats for protection against the fouling organisms; but there is one great flaw. We had a good many failures during the last few years of some of our marine structures. I have in my laboratory piling from wharves costing \$85,000 which has been totally destroyed and has had a service life of less than 6 years. Those losses can be overcome; they are not necessary. The great trouble is that for all of those losses only one could be attributed to a failure of what is considered an excellent preservative. All of the other losses were due, first to the selection or the use of timbers which were entirely unsuitable, which should never have been accepted, which did not meet with the specifications, and second, the preservative. Some of the preservatives which were used for these wharves were simply atrocious; there was no justification for permitting the use of such preservatives.

Two wharves costing \$5,000,000 were treated with a preservative which had already been publicized as worthless for use in salt water. In fact, when that preservative was used it really lubricated the wood so the bugs went through it faster. The pieces which did not have any treatment lasted longer than the treated pieces.

Now, I do not want to be critical; that is not my intention. I simply think we can overcome those troubles. If war comes materials will have to be accepted. In many cases the statement was made "all right, take anything we can get, we only need it for 3 or 4 years," but, unfortunately every one of those structures which were only needed for 3 or 4 years didn't last more than 2 years and now we find



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we do need them and have got to rebuild.

Third is the method of treating. In the rush of work, time is money, and frequently they would attempt to treat timbers in 5 or 6 hours which should require 24 to 30 hours. There are specifications for the proper treating of timber which if followed would avoid such troubles.

The next thing that causes trouble after the material has been treated is the method of construction. Say timber is given a heavy preservative treatment—a 3-inch penetration of the preservative. When those piles are driven it is necessary to use sash-bracing and sway-bracing to give that structure strength. The contractor likes to do a nice, neat-looking job so he cuts into the treatment—it is called "dapping"—and removes the shell of the preservative-treated wood to put on untreated bracing. Of course, in a year the entire thing is completely cut up, just 1 year. The entire value of the preservative is lost, all of that money has been wasted, and the most important thing of all, the wharf is destroyed. All of that happens in a year or two.

It is too bad to have to spend so much money, perhaps \$1,000,000 or \$2,000,000, to build a structure, and then to save not more than perhaps \$4,000 or \$5,000 to make certain by proper inspection of a qualified inspector that those specifications have been fulfilled and that the buyer has received full value for the money he has spent. That, to my mind, is the biggest factor we have to contend with now. I feel that we should devote every effort to see, first, that the proper specifications are used. This is as true of boats as wharves, of course, that the proper materials are specified in every way and then that the greatest care is used to see that those specifications are followed by having a competent inspector.

I have been to treating plants where I found a man inspecting piling with a little book in his hand. He said, "What is a shake?" It is a type of defect in timbers. He was inspecting a very valuable order, about \$480,000 worth of wood and he had never seen wood before. He didn't know the difference between pine and fir. He was an excellent steel man, but he had been sent to inspect this material, and, of course, naturally, the company which is selling is not taking too great pains seeing that they deliver grade No. 1 material.

We have the materials, we have the finest types of preservatives, we have the finest types of antifouling coats available. Our real trouble today, the things you hear of, are not due to them. They are due to the fact that

after buying and paying for fine anti-fouling coat and you order the boat yard to have your boat prepared and painted, you find that the painter who finally applies the brush, has stirred the paint up, doesn't like the consistency too well so he goes up to the hardware store and he knows that turpentine, gasoline, and many other things make good thinners. It doesn't make any difference to him, but it absolutely ruins the paint. I have seen that happen many times.

I went to a shipyard right near here early one morning to see a certain boat painted. It was bitter cold, just about zero, and that boat was in fresh water. When she was hauled out on the ways, of course, a very thin layer of skim ice was there. I could put my hand on and lift it up and there would be the print of my hand.

They painted the boat. Of course, as soon as the boat was launched the paint spread all over the harbor and that was the end of that coat of paint.

because for every one who reads this literature, these various advertisements, and safety slogans, there are nine or ten who do not read them.

Spreading the word of safety, I feel, falls very largely upon such associations as the National Association of Engine and Boat Manufacturers, the oil companies and the marine underwriters.

The Outboard Boating Club of America made a definite approach to the safety problem last year when they had their landlubber series of posters. At almost every point and place where outboard motors were used and sold they had these landlubber signs up, and each month the character, "Lem Lubber," was doing some ridiculous thing. He was either charging through a bathing area full of people swimming or he was roaring through moorings. He was doing everything that was unsafe. These posters were made up in cartoon style and did a tremendous job.

I think that in the big boat field there is a definite need for exactly that type of very simple language and cartoon posters, pictures, and illustrations put up at all of our various marinas, boat yards, dealers, or fueling points. Constantly confronting the public with these simplified safety slogans will help to get over the basic points of safety to the boating public. You have to hit the boating public not once, not twice but constantly to keep them conscious of the matter. We all know that the very best intentions are in most boat owners' minds when they start off the season; they have gotten word from various sources as to what is necessary for safe boating. At the beginning of the year they check their boats; they are sure that this is done and that that is done and so forth, and so on. But after the second week end of summer cruising all of those good intentions are put aside and they are out having fun. They become slipshod and, unfortunately, accidents result.

A series of educational talks, starting, I believe, with oil companies, instruction of men working at their various outlets in safety procedures, and constant jogging of them to follow along, will prevent, I feel quite sure, many of our unfortunate fires and explosions. In turn, these men running the various service facilities will be able to pass on to the boat-owning public safety hints and safety precautions. They are the people who are exposed more to the individual boat owner than almost anyone that you could name. They are in constant contact with them, they have access to the boats, they get aboard for fueling, for other services, and they can see where there are very, very dangerous factors existing.

## SPREADING THE WORD OF SAFETY

Address by Mr. Louis W. Eppel

Assistant Secretary, Wm. H. McGee & Co., New York City

Presented at the Fifth Annual Motorboat Safety Conference, Hotel Shelton, New York, January 18, 1951

When I was asked to speak here today I accepted the invitation readily as I felt I was in a little different position than quite a few people since I can put on two different hats in approaching this safety problem. I can put on the hat of the marine underwriter or I can put on my hat as a contributor to one of the boating magazines.

In both positions we need boat owners. As marine underwriters we meet a lot of them personally and in magazines we meet them through correspondence.

Standing here in the clean-up position, I think it is only fitting and proper to say that it is all very wonderful to discuss safety matters here with people who are safety-conscious. Exchange of information within the industry is very valuable. However, the big problem is "Let's get it out to the boat owner" and how are we going to do that? We have the Yacht Safety Bureau, the Coast Guard, the marine insurance underwriters, the various manufacturers, all stumping for safety. And we admit we have major problems; first, to get this information which we have discussed here and in years past over to the public; second, getting the boating public conscious of these safety matters; and third, persuading the public to follow through. The last, I think, is the most difficult of all.

Some of the possible solutions fall under the categories of the people who are represented here today. The insurance company underwriters have done a magnificent job in preparing literature which they make available to each and every one of their policyholders and also to prospective policyholders. I do not know of an insurance company or an underwriting company which does not have excellent safety literature available. It is

available not only to their policyholders who are paying the freight to some degree on this safety program, but it is available to all who write in and ask. As an example of that, in recent months past, my company got out a little booklet, originally intended to be delivered to the policyholders. Word of the booklet got around, and I wish we had as many policyholders as we have sent out booklets. I would be in a very strong position to ask for another dollar a week raise.

Insurance companies have done a magnificent job, at great expense, in preparing good safety booklets and pamphlets.

The surveyors who go about and make the personal contacts with the yacht owners also have done a wonderful job in getting the safety program over to the public.

The Coast Guard needs no endorsement; we know what they have done.

The press, as a whole, and especially the boating editors of all of our major publications have worked very hard to get the people and the boating public safety conscious.

The oil companies have gone all-out in preparing literature and making it available at their distributing points, at the National Motorboat Show, at other boat shows, and the dealers themselves have done quite a bit of work on getting the public safety-conscious and following through. However, it seems to me the number of people reached is extremely limited especially when we hear figures of 400,000 or 500,000 numbered boats; we don't know how many thousand unnumbered boats there are.

Advertisements by the industry as a whole, in newspapers and boating publications, trade magazines, and so forth, might get part of this safety message over. We have got to go further; I feel we have to go further

I believe that they are the logical people to step in and start spreading this word of "safety" which will eliminate a lot of accidents.

The second point is through the dealers, boat sales agencies, and manufacturers' representatives. They, too, can do much in getting the word of "safety" over to the public. It is all well and good to sell a new Matthews or a new Richardson or some other craft to a customer and turn him loose. You have made your sale; you have made your commission, and possibly, with all good luck, you might have their winter storage.

It would be a lot better to educate that man, especially if he is a newcomer, in some of the basic fundamentals of yacht safety and safe operation at the time of the sale, and perhaps spend a little time with him, pointing out to him exactly what he should do in certain circumstances. There is enough literature available to give to him at no cost to you and

by educating the newcomer you are spreading the word of "safety." It all comes down, as near as I can figure, to the individual who is engaged in the retail end of our boating industry to get this word of "safety" spread.

One factor which I think has been very, very seriously overlooked in other sections of the country and somewhat in New York, is the use of the independent radio station. Almost every radio station has a sports column or a sports page or a weekly sports broadcast. Here in New York the boating industry has been most fortunate in having Lew King of WINS who has a weekly radio program on yachting. Periodically Mr. King, who has a sizable following, goes through various safety pamphlets published by insurance underwriters, the oil companies, the Yacht Safety Bureau, and the Coast Guard. He reads all of this over the air, pointing out the high lights, and he really gets over a tremendous amount of

education in his program. Now, it is not hard to get to these people running sports programs on your independent stations throughout the country to cooperate and I feel sure that dealers and insurance agents, or anyone connected with the industry, could prepare short messages that the sports program, during the boating season, would be only too pleased to put on the air. It is free and it reaches a tremendous audience interested in boats or otherwise they wouldn't listen to such a specialized broadcast.

We can talk for days on how to spread the word of "safety," but we can't go out and tap every boat owner on the shoulder and force literature down his throat, that is impossible. The main problem is to get to as many people as possible and have those people, in turn, pass the word along.

The insurance underwriters have made quite a contribution by having

# ROPE MEASUREMENTS



**HOW ROUND IS ROPE?**  
FIBRE ROPE IS MEASURED  
BY CIRCUMFERENCE



**HOW WIDE IS WIRE?**  
WIRE ROPE IS MEASURED  
BY DIAMETER



# WINDS

are named according to the direction from which they come...



their surveyors visit yacht clubs and boating groups and give talks on safety. Here again you get to a great many people actively interested in the sport and you can reach them clearly and simply. The question and answer series which follow any of these talks are certainly most heartening because the people are basically interested, if only they are shown the proper way to go about making their sport safer.

To get the word to the boat-owning public is a matter of complete cooperation on the part of the press, the industry, the manufacturers of gadgets, boat and engine manufacturers, the suppliers of fuels, the insurance underwriters, and anyone even remotely connected with it.

We have gotten excellent cooperation from the Coast Guard, the Yacht Safety Bureau, the underwriters, and the oil companies. Let's see if we can't get each one of these agencies spread out a little bit further and get the word to every boat owner instead of just a specialized few.

## SELLING VESSELS TO ALIENS

Vice Adm. E. L. Cochrane, head of the Maritime Administration, United States Department of Commerce, announced recently that President Truman's emergency proclamation has brought into operation, among others, the statutory provisions prohibiting the transfer of any interest in an American-owned vessel or shipbuilding plant to foreign ownership without prior Maritime Administration approval.

The prohibition extends to sales, charters, leases, and other transfers of interest in such vessels and plants; to agreements to effect such transfers; to agreements and understandings whereby the controlling interest or a majority of the stock of a corporation, organized in the United States and owning such vessels or facilities, would be vested in or for the benefit of a noncitizen; and to related activities.

The statute brought into effect is section 37 of the Shipping Act, 1916, as amended (46 U. S. C. 835).

Section 37, in full, follows:

"That when the United States is at war or during any national emergency, the existence of which is declared by proclamation of the President, it shall be unlawful, without first obtaining the approval of the Board [now Maritime Administration]:

"(a) To transfer to or place under any foreign registry or flag any vessel owned in whole or in part by any person a citizen of the United States or by corporation organized under the laws of the United States, or of any State, Territory, District, or possession thereof; or

"(b) To sell, mortgage, lease, charter, deliver, or in any manner transfer, or agree to sell, mortgage, lease, charter, deliver or in any manner transfer, to any person not a citizen of the United States, (1) any such vessel or any interest therein, or (2) any vessel documented under the laws of the United States, or any interest therein, or (3) any shipyard, drydock, shipbuilding or ship-repairing plant

or facilities, or any interest therein; or

"(c) To enter into any contract, agreement, or understanding to construct a vessel within the United States for or to be delivered to any person not a citizen of the United States, without expressly stipulating that such construction shall not begin until after the war or emergency proclaimed by the President has ended; or

"(d) To make any agreement or effect any understanding whereby there is vested in or for the benefit of any person not a citizen of the United States, the controlling interest or a majority of the voting power in a corporation which is organized under the laws of the United States, or of any State, Territory, District, or possession thereof, and which owns any vessel, shipyard, drydock or ship-building or ship-repairing plant or facilities; or

"(e) To cause or procure any vessel constructed in whole or in part within

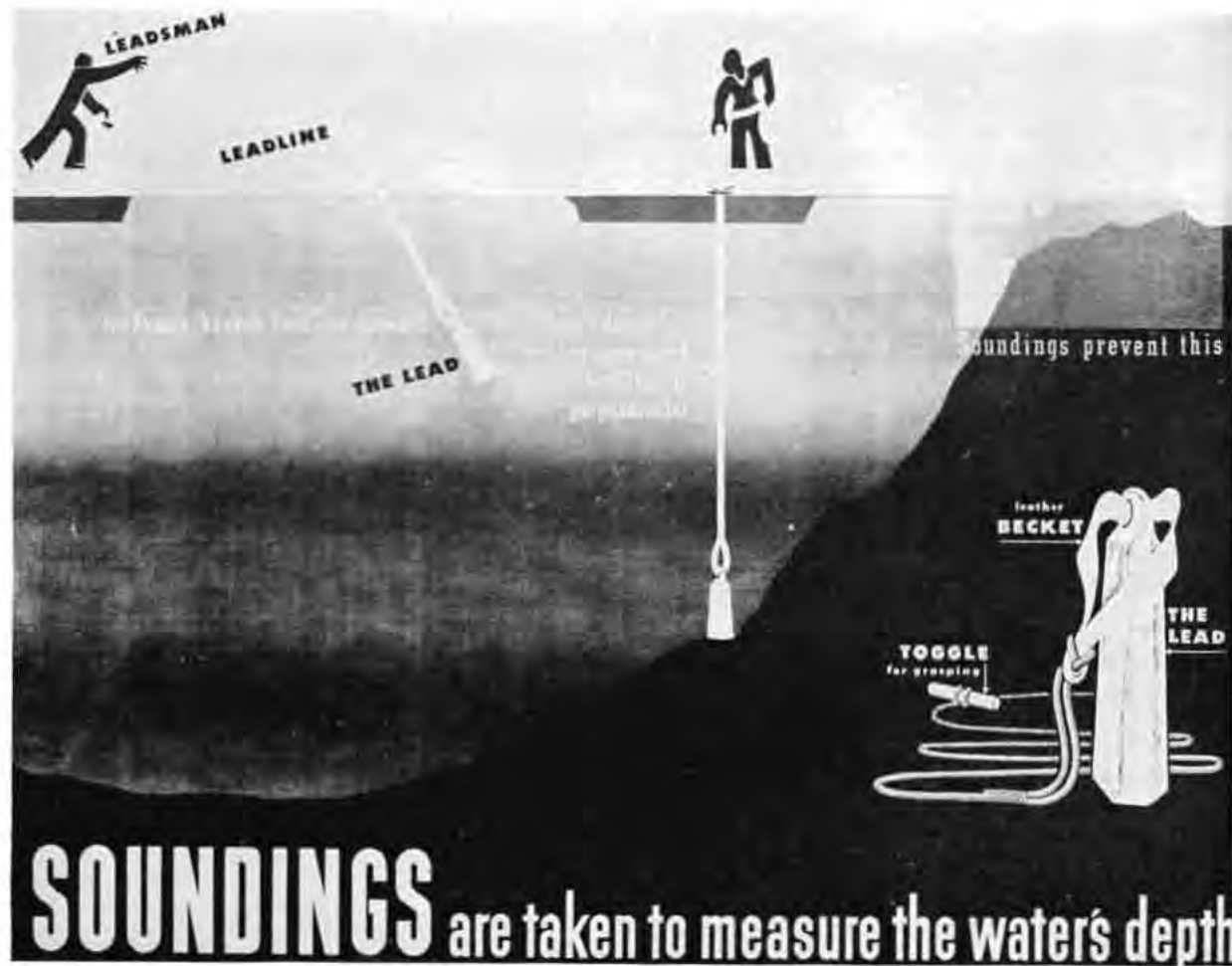
the United States, which has never cleared for any foreign port, to depart from a port of the United States before it has been documented under the laws of the United States.

"Whoever violates, or attempts or conspires to violate, any of the provisions of this section shall be guilty of a misdemeanor, punishable by a fine of not more than \$5,000 or by imprisonment for not more than five years, or both.

"Any vessel, shipyard, dry dock, ship-building or ship-repairing plant or facilities, or interests therein, sold, mortgaged, leased, chartered, delivered, transferred, or documented, or agreed to be sold, mortgaged, leased, chartered, delivered, transferred, or documented, in violation of any of the provisions of this section, and any stocks, bonds, or other securities sold or transferred, or agreed to be sold or transferred, in violation of any of such provisions, or any vessel departing in violation of the provisions of

subdivision (e), shall be forfeited to the United States.

"Any such sale, mortgage, lease, charter, delivery, transfer, documentation, or agreement therefor shall be void, whether made within or without the United States, and any consideration paid therefor or deposited in connection therewith shall be recoverable at the suit of the person who has paid or deposited the same, or of his successors or assigns, after the tender of such vessel, shipyard, dry dock, ship-building or ship-repairing plant or facilities, or interest therein, or of such stocks, bonds, or other securities, to the person entitled thereto, or after forfeiture thereof to the United States, unless the person to whom the consideration was paid, or in whose interest it was deposited, entered into the transaction in the honest belief that the person who paid or deposited such consideration was a citizen of the United States."



# LESSONS FROM TRAGEDIES

## WHAT PRICE HUMAN LIFE?

The American people feel that human life should be protected as much as possible. When large numbers of lives are lost, past history shows the public will demand that corrective steps and actions be taken. The case histories written in this issue are only a few of the large number filed with the Coast Guard.

In the pleasure craft field the accident rate is increasing at an alarming rate. It has been stated informally by some people that in certain areas

there is an explosion and fire at the rate of approximately one a week among the pleasure craft.

The Coast Guard has collected data on the accidents occurring on motorboats and motor vessels of less than 300 gross tons where such accidents are required by law to be reported. These figures were compiled as of November 15, 1950.

The increase in deaths from 59 in the fiscal year 1946 to 203 in the fiscal year 1950 is appalling. Therefore, let's be careful in 1951 and not have any lives lost because of carelessness,

negligence, and poor seamanship on board pleasure craft.

While statistics are dry reading material, we should remember that the persons represented by little numbers suffered many aches and pains which can never be reflected in statistics.

If you are careful, prudent, and exercise good seamanship during 1951, then you are properly evaluating the price for a human life which cannot be counted in dollars and cents.

Read the following statistics and resolve to follow the A B C's of safety—"Always Be Careful."

## ACCIDENTS—MOTORBOATS AND MOTOR VESSELS LESS THAN 300 GROSS TONS ON INLAND WATERS OF UNITED STATES

	Fiscal year 1946			Fiscal year 1947			Fiscal year 1948			Fiscal year 1949			Fiscal year 1950			Fiscal year 1951 (July and August only)		
	Oil-screw vessels			Gas-screw vessels			Oil-screw vessels			Gas-screw vessels			Oil-screw vessels			Gas-screw vessels		
	Number	Number	Deaths	Number	Number	Deaths	Number	Number	Deaths	Number	Number	Deaths	Number	Number	Deaths	Number	Number	Deaths
Collisions.....	189	80	9	59	113	8	102	93	13	109	92	33	131	107	25	12	30	0
Groundings.....	31	17	0	33	22	1	25	21	0	39	21	1	35	15	3	3	3	0
Foundering.....	27	34	35	31	39	50	40	40	54	51	64	87	56	94	163	9	23	36
Fires and explosions:																		
Vapor.....	2	41	7	3	48	14	10	54	13	11	61	20	*16	80	16	2	20	1
Other causes.....	26	25	6	21	17	6	28	36	7	40	29	7	31	27	2	2	3	1
Miscellaneous.....	17	3	2	6	9	0	10	6	3	15	13	5	4	8	0	2	0	0
Total accidents.....	292	209	59	153	248	79	215	250	90	265	280	153	273	331	263	30	79	38
Grand total.....		501			401			465			545			604			109	

## FIRES AND EXPLOSIONS—MOTORBOATS AND MOTOR VESSELS LESS THAN 300 GROSS TONS ON HIGH SEAS AND FOREIGN

Fires and explosions:																		
Vapor.....	0	2	0	0	3	0	1	3	13	1	0	0	2	2	0			
Other causes.....	2	2	0	7	1	3	7	4	3	0	0	0	8	2	1			
Total accidents.....	2	4		7	4		8	5	17	1	0	0	10	4				
Grand total.....		6	0		11	3		13			4	0		14	1			None

Basis—The above tabulation is based on casualty reports submitted to the U. S. Coast Guard.  
Fiscal year—1-year period from July 1 to June 30.

\*14 of the vapor explosions on oil-screw vessels were caused by the ignition of gas vapors from auxiliary gas engines.



### MOTORBOATING AND LIQUOR DON'T MIX

In a recent case in which criminal proceedings were instituted against the operator of a motorboat for negligent operation, it is very apparent

that drinking intoxicating liquors and motorboating do not mix. Three people decided to take a motorboat ride at 4 o'clock in the morning. They had been on an all-night party and all of them were feeling the effects of two or more drinks of whisky, followed by "beer chasers." They boarded a 16-foot motorboat and decided to have a little fun. While leaving the yacht basin, they observed

the freighter slowly proceeding to dock.

The motorboat operator having sighted the freighter decided it would be fun to circle this vessel. One complete circle was made around the vessel in the restricted harbor area. Then the motorboat while traveling at a high rate of speed crossed the starboard bow of the freighter again and while maintaining this high speed



crashed into a pier. The motorboat then backed away from the pier and again crossed the bow of the freighter and proceeded out to sea. When the motorboat was abreast of the freighter, its motor stopped and the craft flooded and sank.

The crew members of the freighter threw ring buoys to the three occupants of the motorboat. A Coast Guard lifeboat was dispatched to the scene of the accident and arrived approximately 5 minutes after its occurrence. The three people were afloat and grasping the ring buoys, although the face of one of the pleasure seekers was submerged in the water. This person was brought aboard the Coast Guard boat and given artificial respi-

ration. After all three were taken aboard, the Coast Guard boat returned to the Coast Guard lifeboat station. Artificial respiration was continued during this time on the one whose face had been submerged in the water and for approximately an hour at the station. When the doctor arrived, a stimulant was injected and artificial respiration continued, but to no avail. After several hours he was pronounced dead by the doctor.

A great deal of effort was required to arouse the second and third persons in the party. On interrogation or observation it was determined that all of them had consumed considerable quantities of liquor and it was very apparent that they were in no

condition to be on board a motorboat—let alone operate it. The owner and operator of the motorboat, who was one of the survivors, was cited and prosecuted for two violations of negligent and reckless operation of a motorboat.

A motorboat can become a dangerous instrumentality and a distinct hazard on the congested and navigable waters of the United States when being operated by a person under the influence of liquor. In this case one person lost his life.

There are many things that do not mix with liquor—motorboats are one of them.

Safety Starts Between The Ears

## Do you know the DIFFERENCE?

### ABEAM....ATHWARTSHIP....ABAFT

an object at right angles to the center line of the ship



across the ship at right angles to the center line



farther all ("A" is about the attack)



### OUTBOARD....INBOARD....FREEBOARD

toward the side of the ship



toward the center of the ship



the sides above the water line



### TOPSIDE.....ALOFT.....OVERHEAD

on any weather (exposed) deck



above all decks



the partition overhead



## DEATH STRUCK 6 TIMES

What started as a carefree holiday fishing outing for a party of 11, ended in a tragedy when 6 people were drowned in a tributary of a large western river.

Four of the drowning victims were children, three of them from one family.

From the investigation it was learned that the members of the party had been fishing in a 14-foot flat-bottom boat with the outboard motor turned off. When the motor was started, water entered the bow of the boat and the occupants became panicky. The boat capsized approximately 200 yards offshore.

One of the members swam to the bank to get help while the others in the party attempted to keep the children on top of the capsized boat. Help was found a short way down the shore and other fishermen hurried to the rescue, but for six members of the party it was too late.

Survivors told how, in a few minutes, they were in the water, they were unable to keep the small children from slipping into the water.

It takes quite a bit of time and effort sometimes to get everything prepared for a fishing trip; getting life preservers, lifesaving cushions, giving at least some instructions in their use and what to do in case an emergency or the unexpected happens; who can and cannot swim, advising someone on shore of their intentions, all this helps a great deal when an unexpected situation arises, but I'm sure you will agree that after tragedy strikes, it wouldn't have taken too much time at all.



## COMMON CATASTROPHE!

PROPER FUEL HANDLING IS A MUST!

When you watch the gasoline being poured into the gas tank, it looks like water but there the resemblance ends. When you smell its distinct odor or see the vapors hanging around the tank spout, it is hard for the average person to realize the potential dangers involved. These vapors are heavier than air and drift to low spots or areas unless broken up or blown away by air. In critical concentrations it will explode or burn—depending upon conditions.

Many people operate motorboats and pleasure craft in the same way they operate their automobiles. The dangers involved are often taken for granted. One of the dangers ignored by so many is the handling of petroleum products used as fuel.

Because gasoline is used in an automobile, it is often taken for granted that fuel "spills" can be merely "washed" away. In the case of a car it is over the highway and in operation moves rapidly with plenty of air circulating around it. The converse is true in connection with a pleasure boat; it is submerged partly in water with the bilge below the waterline. The bilge area and foundation parts of the motor are submerged below water level. The motorboat moves slowly over the water when speed is compared with that of an automobile.

Therefore, it is extremely hazardous to take shore-side ideas about motors and fuel handling on board motorboats and pleasure craft.

To illustrate this point of false security in handling fuel, the operator of a pleasure cruiser recently invited 14 guests aboard. After refueling at a yacht club float, he endeavored to start the engine. However, the starter did not function. Subsequently, one of the guests entered a small rowboat with the intention of towing the motorboat away from the float to a mooring buoy while a second guest was on the float ready to handle lines.

When the vessel was about 6 feet off the float a second attempt was made to start the engine with the self-starter. This was followed by a terrific vapor explosion in the after cockpit. All the people on the craft jumped overboard, except the operator who was killed instantly, and were pulled from the water by club members who were nearby.

As a result of the explosion three members of the party lost their lives and nine others suffered severe burns. Only 2 people out of the 14 escaped without injuries.

An improperly constructed and installed gas tank permitted vapors, forced out during the filling process, to find their way into the bilges, also permitted any overflow of gasoline to enter the bilges, and in this case, there is reason to believe that approximately 10 gallons of gasoline actually were spilled into the bilges.

To knowingly allow this condition to exist aboard his craft can only be attributed to gross negligence on the part of the owner. Why the explosion happened at this particular time will apparently never be known as the condition existed since the installation of the faulty gas tank.



## ONE SWAMPED MOTORBOAT

POOR SEAMANSHIP CAN BE TRAGIC!

It seems difficult to understand how four people could be so ignorant of the requirements for the proper handling of a small boat. In this case a 16-foot motorboat with a 12-inch freeboard was swamped on one of our large western rivers as a result of improper handling of the motorboat in the wake of a passing vessel. In the words of one of the survivors, he said, "I don't like to lay the blame in any spot. I would say the principal cause was poor seamanship on our part and due to the fact that we were altogether inexperienced and not properly equipped." A casualty of this kind illustrates the necessity for people who operate water-borne vessels that certain rules of seamanship must be followed. For as certainly as night follows day the violation of common-sense seamanship will result in tragedy.

In this particular case four men decided to go goose hunting. To make it easier they obtained a 16-foot boat with an outboard motor. It had been recently painted and was in excellent condition. They were proceeding downstream outside a dredged channel and approximately 100 to 150 feet from shore on a cool November morning. The men were as follows: One in the bow, two amidship, and one in the stern. The heaviest fellow was seated in the bow so that approximately 10 or 12 inches of freeboard was available. In the slight haze they observed a vessel proceeding slowly down the channel and immediately



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proceeded in toward shore. After the vessel had passed and the wake of the vessel was approaching the motorboat they turned the bow of the boat into the waves. When the first wave broke over the bow and they shipped water, the man in the stern immediately changed his course so that the boat was broadside to the waves, with the result that the boat, instead of riding over the rolls went through them, probably because one of them stayed in the bow of the boat. When they started to ship water the motor "conked out" and the operator lost all control in steering it. The boat did not capsize—it went straight down. After the fellows noticed the boat was sinking, they all thought immediately of getting ashore and jumped overboard. Two of the fellows, finding they could not swim ashore, returned to the boat and turned it over. The other two men drowned before reaching shore. All four of the men were dressed in heavy winter clothing and it was with difficulty that they could stay afloat in the water. The boat was equipped with two oars, but no effort was made to use them. Although they had obtained life preservers before starting on the trip, in their hurry to go hunting these life preservers were forgotten and left ashore, so that there were no life-saving devices in the boat at the time it swamped. The men did not think it was very important to carry life preservers anyway, and so started on their ill-fated hunting trip. This tragic accident points out several important reasons why good common sense should be followed when navigating any type of water-borne vessel. Some of them are:

1. Be sure there is a lifesaving device immediately available for each person on board.
2. Be sure that the people are placed in the boat so that the maximum amount of freeboard at the bow is available.
3. Be sure that oars are available and in case the outboard motor "conks out" that the oars can be immediately shipped so that the boat will be under control.
4. Be sure that the man who operates the motor and is handling the steering knows something about seamanship and can handle the boat under unexpected emergency conditions.

The old saying "A chain is no stronger than its weakest link" can be applied in this case. From the record it is apparent that all the men were inexperienced in small-boat handling and did not realize or know what to do in case the unexpected happened.

## TOO MANY FISHERMEN!

CROWD YOUR BOAT AND YOU CROWD YOUR LUCK!

With great anticipation five men decided to go fishing. They wanted to catch some fish and paid no attention to some mighty important details. The results? No fish and three men paid with their lives!

On a Saturday in June five men wanted to try their luck fishing and obtained a 15-foot rowboat with an outboard motor, from a boat club for fishing on some semiprotected waters of a large sound on the east coast. There was a northwest wind blowing 30 to 35 miles an hour. It was the last of the ebb and the sea was choppy.

Visibility was good. Storm warnings had been posted for the area where the men were going fishing, but they had not checked on this before leaving the club and, therefore, were ignorant of that fact.

This party made several stops in various places in order that lines could be dropped by the men to "test their luck." Finally the anchor was dropped in 13 feet of water, a distance of 500 or 600 feet off a small island and approximately 2 miles from the main shore line.

Shortly after anchoring the weather became decidedly worse and it was mutually decided to proceed inshore for shelter. The outboard motor was started in preparation for proceeding inshore. The official record is not

## MOPE and DOPE



"He'll turn. We have the right-of-way!"



clear as to just what happened. Probably, however, while attempting to raise the anchor the boat broached the waves because the survivors indicated the boat filled at the bow, sank by the stern, and turned over. Before help arrived about 4 hours later, three of the men were lost and two were saved. These two men were clinging to the boat and picked up by another fisherman who noticed they were in trouble.

This boat was equipped with the necessary lifesaving devices with the possible exception that one buoyant cushion may have been missing. However, on checking one of the buoyant cushions which was salvaged with the boat an examination indicated that it had been used as a seat cover for so long and was so old that it was worthless as a lifesaving device. This tragedy points out several things that fishermen should always check before leaving for a day of sport:

1. Is there a life preserver or buoyant cushion available for each person in the boat?
2. Is the lifesaving device in good condition and able to perform its intended purpose?
3. Is the lifesaving device in a readily accessible and immediately available place for each person?
4. Is the boat large enough to accommodate all persons going without undue risk?
5. Are the weather conditions suitable for fishing without undue risk?

In this case these men were looking for a little fun and found only grief and trouble. Three men lost their lives because the boat was overloaded and lifesaving devices were inadequate to help them in an emergency. Although the weather was comparatively fair when the fishing party put out to sea, the boat was not able to overcome the sharp increase in the weather and resultant heavy sea which caused her to fill and sink. Forethought is better than hindsight! So before you go fishing or pleasure boating, be sure it is safe and then exercise good seamanship while on the water.



## THE LOST WEEK END

or

### AN UNSOLVED TRAGEDY

A fisherman while on his way to tend his nets chanced by the lee side of an island and noticed an overturned 14-foot plywood boat with an outboard motor attached anchored near the channel. Over the water for a space of a couple of miles he

noticed various articles of camping gear floating on the water. There was no sign of life around the boat, although he may have heard dogs barking on shore some distance away.

On the official inquiry it was developed that lack of forethought, good judgment, and common sense resulted in four people losing their lives while anticipating a lot of fun fishing.

A 14-foot, open-type plywood boat, designed to carry two people and fishing gear, was made ready for a fishing trip in the dead of a fall night. A 5-horsepower outboard motor was secured to the stern. An abundance of fishing and camping gear, including sleeping bags, food, 100 pounds of ice, and a lard can full of cooking equipment was stowed on board. As a final touch, four people and three dogs climbed in the boat. How the boat was able to still float is somewhat of a mystery because it was overloaded before the dogs and people clambered on board. They all probably just laughed as they saw how near the gunwale was to the water.

Then the party shoved off for a trip of approximately 3 miles. The boat managed to travel approximately 2 miles, at which point it was found bottom side up. It can only be assumed that the boat capsized due to a heavy current or poor seamanship, or a combination of both. However, the preponderance of evidence indicates the boat was loaded far beyond its designed capacity. Then, too, the official inquiry developed that all kinds of fishing and camping gear was carried, yet no indication could be found that life preservers or other lifesaving devices were either on the people or stowed in the boat immediately available in case of an emergency.

The only survivors on this ill-fated week-end fishing party were the three dogs who were able to swim ashore. They could swim and nature has equipped them with heavy fur for protection against the cold. An intensive search was required to locate the bodies of the four people who lost their lives. It is a matter of conjecture as to how long they were in the water before they drowned. The weather was clear and cold with a mild breeze. It was nighttime and the water was cold. In all likelihood, the people were heavily clothed and weighted down by extra clothing and fishing paraphernalia so that movement in the water was greatly reduced.

Inasmuch as all who could explain what happened died as a result of overconfidence in the ability of a "boy" to carry a "man's" load, it is impossible to ascertain definitely the cause of the tragedy. The only thing

this tragedy does is point out that overloading a small boat and failure to exercise good common sense can lead to suicide. Every person on board the boat just failed to recognize that traveling on water is dangerous unless adequate precautions are taken to cope with all emergencies that may arise.

It is difficult to understand why anyone, not just the experienced seaman, but anyone, will cast aside all reason when they attempt to enter a field in which they have little or no knowledge.

In the particular case at hand, had some thought been given to the vessel's capacity, it is quite probable that these four people would be living today. Even experience isn't able to teach a lesson here.

### KNOW YOUR NAVIGATION

Many people who navigate small boats fail to realize that it is just as important to know navigation when caught out at sea in a heavy fog and a storm in a small boat as it is in a large vessel. A recent stranding occurred on the west coast which illustrates very cogently the necessity for being able to identify navigation aids and other landmarks in the area in which a person plans to operate his boat.

In this particular instance the operator with considerable experience decided to take a friend for a short trip out to sea. They left in the middle of the afternoon with the weather clear, the tide ebbing, and a low ground swell. After going several hours, a westerly wind came up with an estimated force of 25 to 30 miles per hour. The seas were breaking then at about 5 feet and a heavy fog rolled in, reducing the visibility to zero. On attempting to return to port the operator mistook the identity of a lighted navigation buoy and started inshore at approximately 2 knots an hour when the vessel grounded on a sandbar. The two men stayed aboard the vessel during the night and kept the motor running with the clutch engaged in order to take advantage of the heat being transmitted from the exhaust while the vessel was grounded. No water was being taken aboard during this time, although the transmission made a peculiar noise while the vessel's engine was in operation. At daylight the men threw over the anchor and about 10 fathoms of chain and line and made their way ashore in a small dinghy.

After having breakfast ashore, the men returned to the place where they left the dinghy and found the vessel floating since the tide had come in

and raised it free of the bar. At this time, however, breakers were running about 8 to 10 feet in height, and to get back to the motorboat in the dinghy was deemed impossible. Approximately a couple of hours later two other men noticed the motorboat at anchor and rowed out to it. They stayed aboard the vessel for what they assumed to be about an hour and inspected it from stem to stern. They were of the opinion that the boat suffered no damage and that the operator could have possibly fallen overboard. These two men stated they intended to make a salvage claim on the boat, since it was anchored on their tidelands.

During the operation to remove the boat from the shallow water, it was discovered that considerable underwater damage had occurred and it became partly submerged with some of the water coming from the seas breaking over the stern. When it was obvious the boat could not be pulled into deep water the vessel was then dragged ashore where considerable damage was done to the hull. As a result of the storm and the heavy seas, the vessel was damaged beyond repair.

When navigating pleasure craft in areas where there are considerable expanses of water, it is essential that boatmen familiarize themselves with all the aids to navigation so that in case of emergency they can determine their location and be able to keep clear of reefs and sand bars.

#### FUEL VAPORS ARE DYNAMITE!

It is a fact that if a half pint of gasoline is allowed to vaporize in a confined space so that the percentage of gasoline vapor to air is within the range of 2 to 4 percent, there may be created a potential explosive power equal to 5 pounds of dynamite.

It must be distinctly borne in mind that all petroleum vapors are heavier than air and consequently accumulate in the lowest part of the space containing them, where being below head level they are not readily detected by the sense of smell, and are, therefore, unsuspected. Such accumulated petroleum vapors may lie dormant in the lower part of the engine room space for a considerable length of time without mishap. However, should a source of vapor ignition be introduced, such as an electric spark, an open flame, a lighted cigarette, etc., a disastrous explosion may result. Hence it is imperative to prevent the accumulation of explosive mixtures. This can be done by keeping gasoline or other petroleum products out of the bilges. Also adequate means for ventilating such space should be provided. The elimination of sources of vapor ignition depends upon human efforts. It is of the utmost importance that reliable equipment and suitable materials be used in the building and equipping of boats. Wherever practicable fire-retardant materials should be used. In addition, first-class workmanship is necessary to insure proper construction and seaworthiness.

A recent explosion and fire occurred on board a 31-foot cabin cruiser built of wood and powered by a gasoline marine engine. In this particular case two men were attempting to shift the boat from alongside the dock to her regular moorings during a rainstorm. The boat was equipped with two cylindrical fuel tanks, port and starboard, with a gravity-feed cross connection. The engine feed line was connected to the cross overline by a tee joint. A valve was installed at each tank and a third valve was installed at the engine. In this installation the fuel system contained flexible fabric sections from the main fuel pipe to the fuel pump and from the fuel pump to the carburetor. The official investigation revealed that all fuel valves were in the open position when the explosion and fire occurred.

The vessel was equipped with a proper ventilating system consisting of blower and suction fans located in fore and aft ventilating hoods with fixed vent hoods.

The owner of the boat was not aboard the vessel when the explosion and fire occurred. Two men were requested to move the boat to its regular mooring in the yacht basin. These men were not familiar with the boat and it is probable they were not aware of the fact that the blower switch was located on the bulkhead of the after compartment and not at the control panel. The control panel did not have a warning sign to use the blower and to ventilate the engine and

## DOES SAFETY PAY?



This boat was lost because the operator did not think it necessary to ventilate the engine space and bilges before starting the motor.



bilge compartments prior to starting the motor. The cabin cruiser had been tied up to the dock for approximately 12 hours and when the owner left the ventilating system, doors, ports, etc., were closed. Since it had been raining for some time rather heavily and hardly any wind was blowing, gasoline vapors accumulated in the engine space from faulty fuel line connections. When the operator started the motor he had made no previous effort to ventilate the engine or bilge spaces. As soon as the starter was pressed, an electric spark occurred in the engine space, followed by an explosion and fire. As soon as the flexible fabric hose sections connecting the main fuel pipe to the fuel pump burned through, the fire was fed by gasoline from the two fuel tanks. The two men on board the vessel were badly burned since part of the deck was blown away and flames engulfed the engine and control departments. The only reason that the boat was not totally destroyed and the dock and other vessels in the vicinity were not damaged was because the heavy rainstorm confined the fire to the cabin cruiser.

The official investigation brought out certain conditions which should not be allowed:

A. Gasoline vapors were present in the engine space because of open fuel-line valves with leaky connections.

B. The flexible fuel line made of fabric sections accelerated the fire because the fuel lines were destroyed during the initial flare with the result that gasoline poured into the engine space and continued to feed the fire for some time.

C. The operator was not aware of the fact, nor informed that the ventilating system installed on the vessel should be operated for at least 5 minutes before attempting to start the engine.

While signs for operating instructions may not look well on control panels of motorboats to the eye of a proud owner, yet a few proper instructions may mean the difference between having a boat or a wreck. In addition, it is also smart to have an additional switch for the blower and ventilating system located on the control panel within easy reach of the operator while navigating the vessel. Safety precautions dealing with petroleum vapors may save a life, possibly your own.

#### TOO MUCH GASOLINE

On a hot July afternoon six men and two boys started out on a fishing trip in a 27-foot motorboat. This motorboat was approximately 11 years old, built of wood of the double-end type, with a cabin forward, open cock-

pit aft, and powered by a 29-horsepower gasoline marine motor. The fuel tank was located in the bow and the fill pipe extended to the foredeck. The owner of the motorboat had recently purchased the vessel for his own pleasure purposes, as well as for taking out fishing parties at various times. On this occasion he had five passengers on board and two crew members.

After all the passengers and crew were on board, the owner and operator then proceeded to the gas dock to replenish his fuel. When the boat arrived at the gas dock the owner ordered the gasoline tank filled and never mentioned to the attendant the capacity of the tank. The gasoline hose nozzle was handed to the owner of the boat who placed it in the fill pipe and instructed the attendant to start the transfer of gasoline. The owner paid little attention to how much gasoline he was taking on board and chatted genially with the attendant of the gas stop. When the owner indicated that the tank was filled, the attendant of the gas stop told him he had taken on 29 gallons of gasoline, whereupon the owner questioned whether the pump was measuring properly since the capacity of the fuel tank was only 21 gallons. However, since the equipment on the gas dock was brand new the owner paid for the gas.

In this particular case the fill pipe and upper portion of the gasoline tank had developed rust holes so that gasoline escaped during the fueling process into the bilges. The quantity of gasoline in the tank before fueling started is unknown, but it is known that at least 8 gallons spilled out of the fuel tank. The owner and operator made no effort to investigate what happened to the excess fuel taken on board. He merely waited for approximately 3 minutes before deciding to leave. When the operator pushed the starter there was a "backfire" from the engine and immediately thereafter an explosion occurred which blew out the starboard side of the cabin trunk and flames spread from end to end of the boat. The six men and two boys on board were singed by the flash flames, but were able to climb out of the boat onto the gas dock.

The owner of the gas dock, fearing that his gas tanks might catch fire, immediately ran to his own speedboat and was able to tow the burning motorboat out of the yacht basin and let her drift ashore, a short distance away. The Coast Guard was also notified to send a fireboat to put out the fire. When the Coast Guard arrived the vessel was enveloped in flames so that the boat became a total loss.

On investigation the fuel tank was found in a rusty condition and rust perforations were also noticed on the top and edge of the tank. The fill pipe was so thin at the place it was welded to the fuel tank that it broke off during the investigation of the boat.

From the record it is apparent that the operator and owner of the motorboat was not too well acquainted with the vessel and did not suspect the dangerous condition regarding the fuel tank. While none of the men on board noticed any vapor fumes, no particular effort was made to find out what happened to the excess gasoline pumped on board nor was any effort made to ventilate the engine room and bilges. This casualty was the result of—

- (a) Improper maintenance;
  - (b) Lack of thorough inspection of the motorboat before starting; and
  - (c) Inexperience of the operator in not sensing any trouble in this case.
- To avoid similar fires and explosions after fueling is completed, it is urgently recommended that the following steps be taken:
- A. Close fill openings.
  - B. Wipe up all spilled fuel.
  - C. Open all ports, windows, doors, and hatches.
  - D. Permit boat to ventilate for at least 5 minutes.
  - E. See that there is no odor of gasoline in the engine room or below decks before starting machinery or lighting fire.
  - F. Be prepared to cast off moorings as soon as engine starts.

## Navigation and Vessel Inspection Circular No. 6-50

UNITED STATES COAST GUARD,  
WASHINGTON 25, D. C.,  
October 10, 1950.

Subj: Safety requirements for motorboats operated for pleasure and commercial fishing purposes and the requirements for the numbering and recording of undocumented vessels.

1. Navigation and Vessel Inspection Circular No. 10-49 is hereby canceled as the supply for public distribution is exhausted.

2. The latest law affecting motorboats in the matter of their equipment is contained in an act of Congress dated April 25, 1940 (46 U. S. C. 526-526t), which superseded the Motorboat Act of 1910. This statute and the



regulations issued thereunder are applicable to all motorboats and certain other vessels propelled by machinery other than by steam more than 65 feet in length, except (a) tugboats and towboats propelled by steam, (b) vessels propelled by steam more than 65 feet in length, (c) vessels having on board inflammable or combustible liquid cargo in bulk, (d) vessels which are subject to the International Convention for Safety of Life at Sea, 1929, carrying or certificated to carry more than 12 passengers on an international voyage by sea, as defined in said Convention, and (e) seagoing vessels of 300 gross tons and over propelled by internal combustion engines subject to inspection and certification by the Coast Guard. The act of April 25, 1940, and the regulations issued thereunder must be complied with by all vessels subject thereto operating on the navigable waters of the United States.

3. The act of June 7, 1918, as amended, which provides for the numbering and recording of undocumented vessels, is applicable to every undocumented vessel propelled in whole or in part by machinery, owned in the United States and found on the navigable waters thereof, except public vessels and vessels not exceeding 16 feet in length measured from end to end over the deck excluding sheer, temporarily equipped with detachable motors. The words "public vessels" as used in this act include vessels owned by the United States or by any State, county, city, or municipality where such vessels are used in a governmental capacity. The exemption in favor of vessels not exceeding 16 feet in length temporarily equipped with detachable motors is construed to apply to any undocumented vessel not exceeding 16 feet in length equipped with an outboard motor.

4. Prior to issuing regulations under the Motorboat Act of April 25, 1940, and the Numbering Act of June 7, 1918, as amended, the cooperation of yachtsmen, yacht and boatbuilders, and manufacturers of boating equipment was solicited. The regulations, therefore, have been formulated for the safety of the boating public by practical men who represent both the Government and the industry, and their comments and suggestions were followed wherever possible in drafting the regulations. The regulations embody the safety requirements felt necessary by the public and the Government. The operation of motorboats in compliance with these regulations will increase safety of life on the navigable waters of the United States and should not be found burdensome. The numbering regulations were

drafted with a view to the expeditious handling of applications for certificates of award of number for undocumented vessels, and owners of such vessels will find that in the great majority of cases and with little effort on their part they may immediately operate their vessels without unnecessary delay.

5. Given below is a brief digest of the more important features of the Motorboat Act of April 25, 1940, and the regulations issued thereunder.

A. A motorboat as defined by the act of April 25, 1940, includes any vessel propelled by machinery and not more than 65 feet in length, except tugboats and towboats propelled by steam.

B. Fines and penalties will not be incurred for failure of motorboats to carry the following equipment:

- (a) Pilot rules.
- (b) Fire extinguishers on outboard motorboats.
- (c) Fog bells on motorboats less than 26 feet.
- (d) Whistles on motorboats less than 16 feet.
- (e) Foghorns on all motorboats.

C. *Navigation lights.*—If lights now installed are those which complied with the old motorboat law and have the range of visibility required by the new act, they may be continued in use as long as they are in serviceable condition. Lights installed or fitted 6 months after the termination of the national emergency shall be of a type approved by the Commandant.

D. *Whistles.*—If the whistle on board complies with the audibility requirements of the rules, even though not the type of whistle required, it may be continued in service until 6 months after the termination

of the national emergency. After that date the specified type is required.

E. *Lifesaving equipment.*—An approved lifesaving device is required for every person on board. Box-type buoyant cushions will be permitted as life preservers on boats up to 40 feet in length. Approved life preservers or ring buoys are required for motorboats 40 feet and over. Purchasers of lifesaving equipment should look for the label or stamp indicating that the device is of a type approved by the Coast Guard.

F. *Commercial fishing motorboats—life floats.*—Wooden life floats made of light buoyant wood may be used on commercial fishing motorboats. The dimensions of every such wooden life float shall be not less than 4 feet in length, 12 inches in width, and 1 3/4 inches in thickness, and the weight shall not exceed 25 pounds. The float may be made in one or two pieces. If made in two pieces, the pieces shall be securely attached with wooden dowels. No metal shall be used in the construction of the float. It shall be provided with two handholes, one at each side, midway in the length, which handholes shall be not less than 6 inches in length and 2 inches in width, with a margin of at least 1 inch at the edge of the float. Wooden life floats, made of balsa wood, shall not be less than 3 feet in length, 11 1/2 inches in width, and 2 inches in thickness. The balsa wood used in the construction of such floats shall be of the same quality as required for balsa wood life preservers. Each two-piece float, in addition to the dowsing, shall be securely glued and the dowels shall be four in number, of 3/4-inch diameter made of straight grained dry hardwood, driven through and entirely across the float through holes bored to slightly less diameter than the dowel.

F. *Ventilation.*—All motorboats which are constructed or decked over after April 25, 1940, and which use gasoline or other liquid fuel having a flashpoint of less than 110° F. shall be provided with ventilation as follows:

(a) At least two ventilators fitted with cowls or their equivalent for the purpose of properly and efficiently ventilating the bilges of every engine and fuel tank compartment in order to remove any inflammable or explosive gases.

(b) The ventilation of the boat is not required where the greater portion of the bilges of the engine and fuel tank compartments is open to the natural atmosphere.

G. *Fire extinguishers.*—The minimum number and type of extinguishers listed in the table are required on board. The type of extinguishers



on motorboats, if in good and serviceable condition, may be used until 6 months after the national emergency. Purchasers of new fire extinguishers may inquire from the seller if the extinguisher is of a type approved by the Coast Guard. When in doubt, this information may be obtained from the Officer in Charge, Marine Inspection, United States Coast Guard, in the area where the motorboat is located, or from the Commandant (MVI), United States Coast Guard, Washington 25, D. C.

**H. Reckless operation.**—Any person who shall operate any motorboat or any vessel in a reckless or negligent manner so as to endanger the life, limb, or property of any person shall be deemed guilty of a misdemeanor and on conviction thereof by any court of competent jurisdiction shall be punished by a fine not exceeding \$2,000, or by imprisonment for a term of not exceeding 1 year, or by both such fine and imprisonment, at the discretion of the court. (46 U. S. C. 526l and 526m)

**I. Destruction of life.**—Title 18, United States Code, Section 1115, provides as follows:

Every captain, engineer, pilot, or other person employed on any steamboat or vessel, by whose misconduct, negligence, or inattention to his duties on such vessel the life of any person is destroyed, and every owner, charterer, inspector, or other public officer, through whose fraud, neglect, connivance, misconduct, or violation of law the life of any person is destroyed, shall be fined not more than \$10,000 or imprisoned not more than 10 years, or both.

When the owner or charterer of any steamboat or vessel is a corporation, any executive officer of such corporation, for the time being actually charged with the control and management of the operation, equipment, or navigation of such steamboat or vessel, who has knowingly and willfully caused or allowed such fraud, neglect, connivance, misconduct, or violation of law, by which the life of any person is destroyed, shall be fined not more than \$10,000 or imprisoned not more than 10 years, or both.

6. From the table one may readily determine the equipment required on the various classes of motorboats which are operated for pleasure purposes. The failure to have such equipment on board at all times when the vessel is operated, constitutes a menace to safety of life and subjects the owner, operator, and the vessel to the penalties prescribed by law.

7. In prescribing lights for auxiliary motorboats when propelled by sail and machinery or by sail alone, the regulations in 46 C. F. R. 25.1-1 to 25.1-8, inclusive, regarding navigation lights, must be complied with by motorboats when operating after sunset and before sunrise. The following requirements are taken from these regulations and apply to all motorboats, when propelled by sail and machinery or by sail alone:

A. Motorboats of classes A and 1, when propelled by sail and machinery or by sail alone, shall carry a white light aft to show all around the horizon. The combined lantern in the fore part of the vessel will not be carried.

B. Motorboats of classes 2 and 3, when propelled by sail and machinery or by sail alone, shall carry the colored side lights properly constructed and screened but not the white lights in the fore and aft part of the vessel.

C. In addition, motorboats of all classes, when propelled by sail and machinery or by sail alone, shall carry ready at hand a lantern or flashlight showing a white light which shall be exhibited in sufficient time to avert collision.

### Equipment Requirements for Pleasure and Commercial Fishing Motorboats

Equipment	Class A 0 to less than 16 feet	Class 1 16 to less than 26 feet	Class 2 26 to less than 40 feet	Class 3 40 to not more than 65 feet
Combination light.....	1 in fore part of boat showing red to port and green to starboard from right ahead to 2 points abaft the beam. Visible at least 1 mile.	None.....	None.....	None.....
Port side light.....	None.....	None.....	1 on port side, properly screened to show red from right ahead to 2 points abaft the beam, visible at least 1 mile.	None.....
Starboard side light.....	None.....	None.....	1 on starboard side properly screened to show green from right ahead to 2 points abaft the beam. Visible at least 1 mile.	None.....
Stern light.....	1 bright white light aft showing all around the horizon. Visible at least 2 miles.	None.....	None.....	None.....
Bow light.....	None.....	None.....	1 bright white light in fore part of boat showing from right ahead to 2 points abaft the beam on both sides. Visible at least 2 miles.	None.....
Whistle <sup>1</sup> .....	None.....	1 hand-, mouth-, or power-operated, audible at least 1/2 mile.	1 hand-, or power-operated, audible at least 1 mile.	1 power-operated, audible at least 1 mile.
Bell.....	None.....	None.....	1 which produces, when struck, a clear bell-like tone of full round characteristics.	None.....
Lifesaving devices <sup>2</sup> .....	1 approved life preserver or ring buoy or buoyant cushion for each person on board.....	None.....	None.....	1 approved life preserver or ring buoy for each person on board.
Flame arrestors.....	1 approved on each carburetor of all gasoline engines installed after Apr. 25, 1940, except outboard motors.	None.....	None.....	None.....
Ventilation.....	At least 2 ventilators with cowls or equivalent capable of removing gases from the bilges in engine and fuel tank compartments of boats constructed or decked after Apr. 25, 1940, using gasoline or other fuel of a flashpoint less than 110° F.	None.....	None.....	None.....
Fire extinguishers.....	1 1-quart carbon tetrachloride or 1 1 1/4-gallon foam or 1 4-pound CO <sub>2</sub> extinguisher. None required on pleasure outboard motorboats.	None.....	2 1-quart carbon tetrachloride or 2 1 1/4-gallon foam or 2 4-pound CO <sub>2</sub> extinguishers.	3 1-quart carbon tetrachloride or 3 1 1/4-gallon foam or 3 4-pound CO <sub>2</sub> extinguishers.

<sup>1</sup> Commercial fishing motorboats may carry any of these specified devices.

<sup>2</sup> Commercial fishing motorboats may carry in lieu of this specified equipment prescribed wooden life floats.

8. Equipment is required for the safety of the persons on board. To be effective it must be in good condition. For proper protection, equipment must not only be on hand but by frequent check it should be ascertained that the equipment is in working order and fully ready for the purpose for which it was designed.

#### NUMBERING AND RECORDING OF UNDOCUMENTED VESSELS

9. Under the act of June 7, 1918, as amended, and the regulations issued thereunder, every undocumented vessel operated in whole or in part by machinery, owned in the United States and found on the navigable waters thereof, except public vessels and vessels not exceeding 16 feet in length, measured from end to end over the deck excluding sheer, temporarily equipped with detachable motors, shall be numbered. The requirements contemplate that machinery-propelled undocumented vessels of less than 5 net tons used for commercial purposes, which are owned in the United States and found on such waters, be numbered under the provisions of the act as such vessels, by reason of tonnage, are exempt from documentation. The Numbering Act, however, is for the purpose of identification only and the certificate of award of number which is issued to any such vessel is solely for such purpose. It is not an authorization, license, or permit for any such vessel to engage in trade.

10. The regulations issued by the Commandant under the authority of the Numbering Act require the following undocumented vessels to be numbered:

A. All boats equipped with permanently installed motors.

B. All boats over 16 feet in length equipped with detachable motors.

11. The following undocumented vessels are not required to be numbered:

A. Public vessels.

B. All boats not exceeding 16 feet in length temporarily equipped with detachable motors.

C. Motor lifeboats carried as life-saving equipment on inspected vessels.

#### APPLICATIONS AND ISSUANCE OF NUMBERS

12. The following procedures describe how to obtain a number:

A. Upon the purchase of an undocumented vessel which has been issued a certificate of award of number under the provisions of the act of June 7, 1918, as amended, and after completion of the bill of sale on the reverse side of the certificate by the vendor or the former owner, the purchaser should execute the application for number for undocumented motor vessel, which is incorporated on the reverse side of the certificate of award of number (CG 1513) and surrender the certificate, bill of sale, and application for a new number to the Officer in Charge, Marine Inspection, United States Coast Guard, having jurisdiction over the area in which the vessel is owned, within the statutory period of 10 days. That officer, upon receipt of the certificate with the bill of sale and application properly executed and upon being satisfied with the evidence of ownership, will assign a number to the vessel and forward the certificate and accompanying papers to the District Commander for processing. He will at the same time issue to the new owner a letter authorizing the operation of the vessel for a limited period, without the certificate of award of number on board, pending the issuance of such papers by the District Commander.

B. In the case of such vessels which are new or which have never been numbered under the provisions of the act of June 7, 1918, as amended, or which are operating under the old form of certificate of award of number, application should be made to the Officer in Charge, Marine Inspection, United States Coast Guard, having jurisdiction over the area in which the vessel is owned, for a certificate of award of number by presenting proper evidence of ownership, such as a bill of sale, builder's certificate, etc., and by the execution of Form CG 1512, application for number for undocumented motor vessel. Upon the exe-

cution of these cards in duplicate and the presentation of evidence of ownership, the Officer in Charge, Marine Inspection, United States Coast Guard, will accept the application and accompanying papers, transmitting same to the District Commander for processing and will thereupon assign a number to the vessel, at the same time issuing a letter authorizing the operation of the vessel for a temporary period under the numbers assigned and pending the issuance of a certificate of award of number by the District Commander.

13. *Number required on bows of vessel.*—Upon assignment of a number by the Officer in Charge, Marine Inspection, United States Coast Guard, or upon receipt of the certificate of award of number, the number awarded shall be painted or attached to each bow of the vessel and shall be in block characters of good proportion and not less than 3 inches in height, reading from left to right and parallel with the water line, as near the forward end of the bow as legibility of the entire number for surface and aerial identification permits. The number shall also be of a color in contrast with the color of the hull so as to be distinctly visible and legible.

14. *Carrying certificate of award of number.*—The certificate of award of number must be kept on board at all times (unless in the custody of the Coast Guard), except in the case of vessels not exceeding 17 feet in length, or vessels whose design or fittings are such that the carrying of such certificate on board would render it imperfect, illegible, or would otherwise tend to destroy its usefulness as a means of ready identification.

#### YACHTS ENTITLED TO DOCUMENTATION

15. The Bureau of Customs has recently extended the privilege of documentation as yachts under the navigation laws to a large class of pleasure boats heretofore excluded. The change makes possible more expeditious travel by small boats between the United States and foreign ports, and facilitates financing and transfers of title of such craft. The order affects vessels of not less than 5 net tons nor more than 15 gross tons used exclusively for pleasure. In addition, as in the past, vessels used exclusively for pleasure of more than 15 gross tons may be licensed or enrolled and licensed as yachts, if otherwise entitled to be documented.

16. Important privileges extended by documentation of vessels as yachts are:

A. Authority to fly the yacht ensign, a right highly prized by yachtsmen.

B. Right to voyage to a foreign port without clearing the vessel through United States customs.

## CUMULATIVE TOTAL OF UNDOCUMENTED VESSELS

Every undocumented vessel operating in whole or in part by machinery, owned in the United States and found on the navigable waters thereof, except public vessels and vessels not exceeding 16 feet in length, measured from end to end over the deck excluding sheer, temporarily equipped with detachable motors, is required to be numbered by the Coast Guard in accordance with

(Continued on page 94)



C. In the case of yachts of 15 gross tons or less, the right to return to a port of the United States from a foreign port or ports without entering the vessel through customs.

D. Provision for recording of mortgages, bills of sale, and other instruments of title, and the keeping of permanent records thereof in the offices of collectors of customs. Mortgages which are so recorded may, upon compliance with the applicable requirements, become preferred mortgages, thus giving additional security to the mortgagee. Owners who document such vessels must effect renewals annually and must report any changes of master to a collector of customs. Requests for documentation should be made through the customhouse at or nearest the port where the vessel is located.

17. The requirements in connection with the documentation of yachts are not mandatory and it is entirely discretionary with the owner as to whether he should document his yacht. Owners who desire to have their vessels documented as yachts should consult with the nearest collector of customs. The regulations on the subject are contained in 19 C. F. R. Part 3. However, yachts and other vessels which are not documented, which are machinery propelled, which are owned in the United States, and which are found on the navigable waters thereof must be numbered under the provisions of the act of June 7, 1918, as amended (46 U. S. C. 288). There are no restrictions as to the length, tonnage, or size of such vessels under the provisions of the Numbering Act which should not be confused with those of the Motorboat Act of 1940 (46 U. S. C. 526-526q).

#### CERTAIN INSPECTION REQUIREMENTS

18. While this circular is published for the express information of owners of motorboats operated solely for pleasure or commercial fishing purposes, in view of the numerous inquiries received by the Coast Guard as to the application of the inspection laws of the United States to motor-propelled vessels, a general statement in this connection seems appropriate. Accordingly, owners and prospective owners of motorboats and motor vessels of above 15 gross tons are advised that if such vessels carry freight or passengers for hire, they are subject to annual inspection by the United States Coast Guard under the provisions of R. S. 4426 (46 U. S. C. 404) and may not be navigated in such service until a certificate of inspection has been issued. Motorboats of not more than 65 feet in length, which are

(Continued from p. 93)

the act of June 7, 1918, as amended (46 U. S. C. 288). The requirements contemplate that undocumented vessels propelled by machinery of less than 5 net tons used for commercial purposes, which are owned in the United States and found on such waters, shall be numbered under the provisions of this act because such vessels by reason of tonnage are exempt from documentation. The Numbering Act, however, is for the purpose of identification only and the certificate of award of number issued by the Coast Guard to any vessel is solely for such purpose. The certificate of award of number is not an authorization, license, or permit for any vessel to engage in trade.

The following undocumented vessels are required to be numbered:

A. All boats equipped with permanently installed motors.

B. All boats over 16 feet in length equipped with detachable motors.

The cumulative total of undocumented vessels numbered under the provisions of the act of June 7, 1918, as amended (46 U. S. C. 288), in the United States from December 31, 1919, to December 31, 1950, is set forth in tables appropriately identified in this issue. These figures illustrate the increase in the number of pleasure craft and small commercial vessels since the identification of such vessels was required. In the tables you will note that no figures were compiled or published for periods ending December 31, 1934, 1935, or 1936. These figures are not available because the former Bureau of Marine Inspection and Navigation devised a new numbering system and statistics are not available from official records. During the period of World War II the numbering of undocumented vessels was performed by the Coast Guard while under the Navy Department. Because of security orders, only the district totals of such vessels were compiled and the number of such vessels by customs ports included in the various naval districts was omitted.

## UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

1919 to 1924, Inclusive

(Number as of Dec. 31 of each year)

Customs port	1919	1920	1921	1922	1923	1924
Baltimore, Md.	7,599	8,768	9,763	10,472	11,052	11,706
Boston, Mass.	7,774	8,741	9,310	9,894	11,001	11,259
Bridgeport, Conn.	3,408	3,953	4,331	4,655	4,934	5,296
Buffalo, N. Y.	848	1,006	1,155	1,226	1,313	1,408
Charleston, S. C.	451	526	608	732	804	878
Chicago, Ill.	3,391	3,883	4,474	4,903	5,324	5,610
Cleveland, Ohio	2,344	2,736	2,996	3,192	3,337	3,541
Des Moines, Iowa	1,524	1,791	2,079	2,234	2,371	2,510
Detroit, Mich.	4,773	5,337	6,000	7,009	7,544	8,187
Duluth, Minn.	740	839	992	1,054	1,035	1,056
Galveston, Tex.	665	759	881	970	1,108	1,287
Great Falls, Mont.			10	12	13	12
Honolulu, T. H.	297	379	433	466	528	552
Indianapolis, Ind.	481	618	744	902	988	836
Juneau, Alaska	1,863	2,212	2,383	2,574	2,789	3,095
Los Angeles, Calif.	1,224	1,294	1,353	1,463	1,946	2,238
Louisville, Ky.	526	764	974	1,148	1,302	1,508
Memphis, Tenn.	501	681	779	945	1,202	2,084
Milwaukee, Wis.	1,292	1,512	1,694	1,771	1,684	1,761
Mobile, Ala.	1,003	1,343	1,767	2,042	2,253	2,470
New Orleans, La.	3,457	4,249	5,649	6,330	7,655	8,928
New York, N. Y.	15,006	18,198	20,402	22,084	23,465	24,900
Norfolk, Va.	5,207	6,390	7,831	8,580	9,255	10,170
Ogdensburg, N. Y.	1,872	2,151	2,396	2,619	2,734	2,980
Omaha, Nebr.	85	99	106	141	163	187
Pembina, N. Dak.	7	7	2	2	2	2
Philadelphia, Pa.	7,172	8,369	9,281	9,724	10,284	10,939
Pittsburgh, Pa.	142	195	258	307	367	395
Port Arthur, Tex.	420	502	613	713	833	995
Portland, Maine	7,586	8,493	9,269	9,922	10,402	10,904
Portland, Ore.	4,198	4,715	4,871	5,135	5,407	5,205
Providence, R. I.	2,207	2,567	2,772	2,932	3,084	3,236
Rochester, N. Y.	1,307	1,479	1,709	1,861	1,969	2,493
St. Albans, Vt.	431	506	544	552	582	609
St. Louis, Mo.	3,042	3,958	4,793	5,258	5,895	6,436
St. Paul, Minn.	424	482	514	530	566	587
San Antonio, Tex.	65	99	114	136	176	221
San Diego, Calif.	91	172	207	207		
San Francisco, Calif.	2,731	3,229	3,461	3,573	3,674	3,817
San Juan, P. R.	73	86	98	117	130	112
Savannah, Ga.	326	670	833	955	945	1,110
Seattle, Wash.	3,459	4,090	4,689	4,963	5,242	5,565
Tampa, Fla.	7,715	9,306	10,581	11,728	12,835	13,915
Wilmington, N. C.	2,865	3,742	4,240	3,668	5,094	5,565
Total	110,791	130,826	148,482	159,701	173,307	184,375

<sup>1</sup> 2,066 numbered motorboats transferred to Tennessee district; the renumbering in that district not completed and, therefore, district of Tennessee is not credited with this transfer.

# UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

1925 to 1928, Inclusive

(Number as of Dec. 31 of each year)

Customs port	1925	1926	1927	1928
Baltimore, Md.	12,146	12,566	13,219	13,913
Boston, Mass.	11,325	11,425	11,762	12,201
Bridgeport, Conn.	5,427	5,981	5,757	5,867
Buffalo, N. Y.	1,548	1,642	1,563	1,377
Charleston, S. C.	935	997	1,042	1,093
Chicago, Ill.	5,922	5,708	6,032	6,302
Cleveland, Ohio.	3,756	4,003	4,287	4,289
Des Moines, Iowa.	2,605	2,679	2,746	2,849
Detroit, Mich.	8,770	9,059	10,424	11,188
Duluth, Minn.	1,056	1,056	1,056	1,056
Galveston, Tex.	1,386	1,519	1,702	1,935
Great Falls, Mont.	12	12	14	14
Honolulu, T. H.	622	656	712	764
Indianapolis, Ind.	920	1,018	1,103	1,249
Juneau, Alaska.	3,534	3,782	3,729	4,201
Los Angeles, Calif.	2,494	2,776	2,974	3,215
Louisville, Ky.	1,670	1,898	2,039	2,187
Memphis, Tenn.	4,820	3,147	3,348	3,673
Milwaukee, Wis.	1,808	1,878	1,997	2,069
Minneapolis, Minn.	569	650	657	672
Mobile, Ala.	2,629	2,813	2,998	3,231
New Orleans, La.	10,060	10,956	11,540	12,014
New York, N. Y.	20,161	27,439	28,962	30,717
Norfolk, Va.	10,910	11,905	12,626	13,318
Ogdensburg, N. Y.	3,188	3,329	3,414	3,418
Omaha, Nebr.	216	236	252	340
Pembina, N. Dak.	8	14	15	16
Philadelphia, Pa.	11,682	12,251	12,840	13,480
Pittsburgh, Pa.	419	472	546	664
Port Arthur, Tex.	1,111	1,171	1,228	1,298
Portland, Maine.	11,363	11,809	12,233	12,563
Portland, Oreg.	5,848	6,204	6,694	6,537
Providence, R. I.	3,064	2,778	2,800	2,861
Rochester, N. Y.	2,600	2,695	2,885	3,123
St. Albans, Vt.	641	665	543	556
St. Louis, Mo.	4,706	5,179	5,666	6,029
San Antonio, Tex.	295	356	409	457
San Francisco, Calif.	4,661	4,325	4,628	4,982
San Juan, P. R.	124	150	161	174
Savannah, Ga.	1,167	1,191	1,247	1,310
Seattle, Wash.	5,903	6,579	6,841	7,079
Tampa, Fla.	15,201	16,792	18,155	19,217
Wilmington, N. C.	5,924	6,276	6,729	7,093
Total	198,636	208,037	219,675	230,582

less than 100 gross tons, when carrying passengers for hire are only required to be operated by Coast Guard licensed operators. No other licensed officers may be required. Machinery-propelled vessels of above 15 gross tons and in excess of 65 feet in length, carrying freight or passengers for hire, must also be manned with such officers and crew as is determined by the proper Officer in Charge, Marine Inspection, United States Coast Guard, upon inspection of the vessel. The complement of such officers and crew is stated in the certificate of inspection. Machinery-propelled vessels of 100 gross tons, or over, generally speaking, are subject to all the provisions of the Seamen's Act of March 4, 1915, as amended. Complete information on these subjects may be obtained from any Officer in Charge, Marine Inspection, United States Coast Guard.

## NOTICE OF MARINE CASUALTY

19. Title 46, Code of Federal Regulations, section 136.05-1, provides in part as follows:

The owner, agent, master, or person in charge of a vessel involved in a marine casualty shall give notice as soon as possible to the nearest marine inspection office of the Coast Guard whenever the casualty results in any of the following:

- (a) Actual physical damage to property in excess of \$1,500;
- (b) Loss of life; or
- (c) Injury causing any person to remain incapacitated for a period in excess of 72 hours.

Notice of such marine casualties must be made to the nearest Officer in Charge, Marine Inspection, United States Coast Guard, in writing and in person, at the port at which the casualty occurred or nearest the port of first arrival, provided that when from distance it may be inconvenient to report in person, it may be done in writing only.

20. Further information in respect to the laws and regulations applicable to motorboats and motor vessels, and advice concerning the requirements for all vessels engaged in carrying freight or passengers for hire may be obtained from any Officer in Charge, Marine Inspection, United States Coast Guard, or from the Commandant (MVI), United States Coast Guard, Washington 25, D. C.

21. Officers in Charge, Marine Inspection, United States Coast Guard, are located at the following ports:

- Albany 1, N. Y., 313 Federal Building.
- Baltimore, Md., 209 Chamber of Commerce Building.
- Boston 9, Mass., 447 Commercial Street.

# UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

1929 to 1934, Inclusive

(Number as of Dec. 31 of each year)

Customs port	1929	1930	1931	1932	1933	1934
Baltimore, Md.	14,461	15,123	15,588	15,888	16,925	16,788
Boston, Mass.	12,048	13,119	13,346	13,402	13,654	13,847
Bridgeport, Conn.	6,057	5,921	6,401	6,480	7,244	7,490
Buffalo, N. Y.	1,398	1,251	1,148	1,180	2,093	2,283
Charleston, S. C.	1,155	1,100	1,233	1,272	1,526	1,624
Chicago, Ill.	6,614	6,957	6,995	7,183	8,114	8,264
Cleveland, Ohio.	4,569	5,006	5,412	5,522	6,706	7,137
Des Moines, Iowa.	2,930	2,978	3,051	3,127	3,295	3,356
Detroit, Mich.	12,012	10,083	10,779	11,834	12,947	12,792
Duluth, Minn.	1,055	1,055	1,055	1,055	833	898
Galveston, Tex.	2,147	2,371	2,611	3,791	3,375	3,683
Great Falls, Mont.	15	17	17	19	22	22
Honolulu, T. H.	841	894	894	938	1,220	1,285
Indianapolis, Ind.	1,377	1,459	1,557	1,652	1,745	1,784
Juneau, Alaska.	3,891	3,676	3,826	3,947	4,007	3,969
Los Angeles, Calif.	3,425	3,584	3,674	3,878	3,980	4,078
Louisville, Ky.	3,287	2,269	2,290	2,275	2,200	2,260
Memphis, Tenn.	3,990	4,164	4,240	3,539	3,830	3,929
Milwaukee, Wis.	2,093	2,179	2,232	2,272	2,476	2,556
Minneapolis, Minn.	693	614	748	759	755	784
Mobile, Ala.	3,367	3,518	3,690	3,853	4,168	4,279
New Orleans, La.	12,430	12,862	14,020	14,769	15,657	16,006
New York, N. Y.	32,247	33,971	35,403	35,379	40,289	41,420
Norfolk, Va.	13,772	14,251	14,318	14,896	15,513	15,704
Ogdensburg, N. Y.	3,422	3,527	3,596	3,252	4,705	4,893
Omaha, Nebr.	396	341	362	368	634	670
Pembina, N. Dak.	20	22	22	28	40	41
Philadelphia, Pa.	14,162	14,975	15,685	15,820	16,808	16,917

See footnote at end of table.

Buffalo 3, N. Y., 440 Federal Building.  
 Cairo, Ill., 425-427 New Post Office Building.  
 Charleston 3, S. C., 32 United States Customhouse.  
 Chicago 7, Ill., Customhouse, 610 Canal Street.  
 Cincinnati 2, Ohio, 748 Federal Building.  
 Cleveland 15, Ohio, 1600 B. F. Keith Building, 1621 Euclid Avenue.  
 Corpus Christi, Tex., 919 Jones Building.  
 Detroit 26, Mich., 430 Federal Building.  
 Dubuque, Iowa, 301 Post Office and Courthouse Building.  
 Duluth 2, Minn., 311 Federal Building.  
 Galveston, Tex., 232 Customhouse.  
 Honolulu, T. H., P. O. Box 4010, 210 Federal Building.  
 Houston 11, Tex., 7300 Wingate Avenue.  
 Jacksonville 1, Fla., 210 Federal Building.  
 Juneau, Alaska, Community Building, 120 Third Street.  
 Ketchikan, Alaska, Coast Guard Base.  
 Long Beach 2, Calif., 1119 Times Building.  
 Louisville 2, Ky., 606 Federal Building.  
 Ludington, Mich., National Bank Building.  
 Memphis 3, Tenn., 322 Customhouse.  
 Miami 32, Fla., 501 Professional Building.  
 Milwaukee 2, Wis., 533 Federal Building.  
 Mobile 9, Ala., Box 1535, 565 Courthouse and Customhouse.  
 Nashville 3, Tenn., 1018 Stahlman Building.  
 New London, Conn., Room 302, Post Office Building.  
 New Orleans 16, La., 311 Customhouse, Canal Street.  
 New York 13, N. Y., 80 Lafayette Street.  
 Norfolk 1, Va., 204 Customhouse.  
 Oswego, N. Y., 205 Federal Building.  
 Philadelphia 6, Pa., 801 Customhouse, Second and Chestnut Streets.  
 Pittsburgh 22, Pa., 1215 Park Building.  
 Point Pleasant, W. Va., 103 Post Office Building.  
 Port Arthur, Tex., 410 Bleustein Building, Proctor at Waco Street.  
 Portland 3, Maine, Room 205, 76 Pearl Street.  
 Portland 4, Oreg., 1005 Palling Building.

## UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES—Continued

1929 to 1934, Inclusive—Continued

Customs port	1929	1930	1931	1932	1933	1934 <sup>1</sup>
Pittsburgh, Pa.	739	477	586	754	907	974
Port Arthur, Tex.	1,340	1,392	1,511	1,610	1,783	1,853
Portland, Maine	12,840	13,187	13,374	13,664	14,237	15,100
Portland, Oreg.	6,864	7,163	7,622	7,907	8,368	8,697
Providence, R. I.	2,956	3,128	3,040	3,038	3,124	2,765
Rochester, N. Y.	3,230	3,448	3,558	3,695	4,454	4,814
St. Albans, Vt.	580	573	615	486	859	923
St. Louis, Mo.	6,499	6,870	7,171	7,400	8,457	8,800
San Antonio, Tex.	523	674	819	928	1,063	1,166
San Diego, Calif.			304	370	450	508
San Francisco, Calif.	5,264	5,572	5,729	5,626	6,049	6,462
San Juan, P. R.	187	216	226	238	238	242
Savannah, Ga.	1,340	1,368	1,396	1,399	1,401	1,259
Seattle, Wash.	7,504	7,867	7,913	8,219	10,481	10,688
Tampa, Fla.	20,180	21,204	22,290	23,240	25,229	26,032
Wilmington, N. C.	7,530	7,901	8,184	7,735	9,067	9,232
Total	242,050	248,448	258,531	264,699	291,018	298,604

<sup>1</sup> The total for 1934 is that on June 30. The number system for undocumented vessels was changed at that time and no figures are available for Dec. 31, 1934, 1935, or 1936.

## UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

1937 to 1941, Inclusive

(Number as of Dec. 31 of each year)

Customs port	1937	1938	1939	1940	1941
Baltimore, Md.	12,544	15,203	16,354	17,561	18,855
Boston, Mass.	9,306	10,603	10,428	11,101	11,522
Bridgeport, Conn.	5,461	6,054	6,570	7,158	7,751
Buffalo, N. Y.	3,784	4,604	5,513	6,458	7,279
Charleston, S. C.	1,062	1,203	1,322	1,376	1,382
Chicago, Ill.	3,576	4,292	5,127	7,807	9,588
Cleveland, Ohio	6,612	8,222	10,422	12,466	13,674
Denver, Colo.	2	4	6	8	8
Des Moines, Iowa	1,071	1,343	1,679	897	720
Detroit, Mich.	9,466	11,354	14,252	16,970	19,835
Duluth, Minn.	1,285	1,697	2,309	2,691	3,154
El Paso, Tex.			1	6	7
Galveston, Tex.	3,405	4,174	5,045	6,510	7,285
Great Falls, Mont.	8	13	18	33	48
Honolulu, T. H.	1,277	1,400	1,608	1,918	2,087
Indianapolis, Ind.	874	1,101	1,273	1,438	1,615
Juneau, Alaska	3,381	3,825	4,312	4,782	4,811
Laredo, Tex.				2,324	2,324
Los Angeles, Calif.	4,227	4,835	5,692	6,289	6,680
Louisville, Ky.	1,363	1,530	2,374	2,804	3,145
Memphis, Tenn.	1,659	2,728	3,702	4,636	5,495
Milwaukee, Wis.	3,529	5,466	7,708	9,647	11,876
Minneapolis, Minn.	1,576	2,182	2,971	3,686	4,336
Mobile, Ala.	2,588	3,049	4,396	5,100	5,576
New Orleans, La.	7,504	8,871	10,028	11,046	11,848
New York, N. Y.	25,397	29,188	32,091	34,666	37,099
Nogales, Ariz.					30
Norfolk, Va.	8,703	9,549	10,372	11,143	11,905
Ogdensburg, N. Y.	4,784	5,371	6,083	6,802	7,440
Omaha, Nebr.	317	452	563	686	698
Pembina, N. Dak.	36	92	102	107	121
Philadelphia, Pa.	12,260	13,841	15,114	16,392	17,481
Pittsburgh, Pa.	1,234	1,679	2,181	2,867	3,696
Port Arthur, Tex.	1,403	1,743	2,067	2,377	2,587
Portland, Maine	7,322	7,951	8,288	8,424	8,657
Portland, Oreg.	5,719	6,563	7,303	7,953	8,546
Providence, R. I.	2,582	2,780	2,829	2,829	2,843
Rochester, N. Y.	3,809	4,478	5,360	6,365	7,043
St. Albans, Vt.	1,521	1,716	1,931	2,099	2,250
St. Louis, Mo.	4,069	5,592	7,385	8,583	9,941
St. Thomas, V. I.	32	41	45	50	54
Salt Lake City, Utah			1	1	
San Antonio, Tex.	1,651	2,066	2,321		
San Diego, Calif.	770	878	973	1,048	1,135
San Francisco, Calif.	7,040	10,145	12,842	15,301	17,173
San Juan, P. R.	222	248	271	299	335
Savannah, Ga.	1,203	1,427	1,616	1,746	1,934
Seattle, Wash.	10,652	13,369	16,087	18,913	21,708
Tampa, Fla.	11,132	12,979	14,788	16,451	17,916
Wilmington, N. C.	4,112	4,590	5,036	5,435	5,793
Total	201,456	240,230	278,847	315,277	347,290



# UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

1942, 1943, and 1944

(Number as of Dec. 31 of each year)

Naval district	1942	1943	1944
First—Boston.....	25,553	25,854	26,397
Third—New York.....	44,463	44,138	44,017
Fourth—Philadelphia.....	17,714	17,634	17,833
Fifth—Norfolk.....	34,403	35,124	36,051
Sixth—Charleston.....	5,133	5,640	6,011
Seventh—Miami.....	13,845	14,181	14,710
Eighth—New Orleans.....	31,041	32,583	34,322
Ninth—Cleveland.....	63,867	77,779	82,443
Ninth—Chicago.....	17,069		
Ninth—St. Louis.....	39,981	44,944	47,080
Tenth—San Juan.....	270		290
Eleventh—Long Beach.....	7,557	7,357	7,295
Twelfth—San Francisco.....	17,732	17,843	17,949
Thirteenth—Seattle.....	32,271	34,137	35,528
Fourteenth—Honolulu.....	1,975	1,571	1,628
Seventeenth—Ketchikan.....	5,067	5,394	5,578
Total.....	357,939	364,461	377,132

\* During the year 1942 this district was a part of the Thirteenth Naval District.

Providence 3, R. I., 409 Federal Building.  
 St. Ignace, Mich., Municipal Building, 396 North State Street.  
 St. Louis 1, Mo., 216 Old Customhouse, Eighth and Olive Streets.  
 San Francisco 26, Calif., 227 United States Appraisers Building, 630 Sansome Street.  
 San Juan, P. R., Federal Building.  
 Savannah 12, Ga., 205 Customhouse.  
 Seattle 4, Wash., 618 Second Avenue.  
 Tampa 2, Fla., 406 Federal Building.  
 Toledo 2, Ohio, 402 Courthouse and Customhouse.

(S) MERLIN O'NEILL,

Vice Admiral, U. S. Coast Guard,  
 Commandant.

## UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

Dec. 31, 1945

Coast Guard district	Customs port	Total
1 (Boston).....	(4) Boston..... 12,141 (1) Portland, Maine..... 9,215 (2) St. Albans..... 2,540 (5) Providence..... 3,324	27,220
3 (New York).....	(10) New York..... 37,437 (6) Bridgeport..... 7,035	44,472
4 (Philadelphia).....	(11) Philadelphia..... 18,164	18,164
5 (Norfolk).....	(14) Norfolk..... 18,081 (13) Baltimore..... 19,077	37,158
6 (Charleston).....	(16) Charleston..... 1,553 (15) Wilmington, N. C..... 2,339 (17) Savannah..... 2,517	6,409
7 (Miami).....	(18) Tampa (part)..... 16,070	16,070
8 (New Orleans).....	(20) New Orleans..... 15,758 (18) Tampa (part)..... 905 (19) Mobile..... 5,761 (21) Port Arthur..... 3,443 (22) Galveston..... 8,258 (23) Laredo..... 1,637 (24) El Paso..... 0 (43) Memphis (part)..... 77	35,845
9 (Cleveland).....	(41) Cleveland..... 13,177 (7) Ogdensburg..... 6,340 (8) Rochester..... 8,413 (9) Buffalo..... 8,056 (36) Duluth..... 3,788 (37) Milwaukee..... 12,343 (38) Detroit..... 25,264 (39) Chicago..... 7,253	84,634
9 (St. Louis).....	(45) St. Louis..... 18,529 (12) Pittsburgh..... 3,796 (34) Pembina..... 119 (35) Minneapolis..... 8,468 (40) Indianapolis..... 5,131 (42) Louisville..... 3,602 (43) Memphis (part)..... 8,252 (44) Vacant (Des Moines)..... 198 (46) Omaha (part)..... 781	48,876

Coast Guard district	Customs port	Total
10 (San Juan).....	(49) San Juan..... 239 (51) St. Thomas..... 66	305
11 (Long Beach).....	(27) Los Angeles..... 6,067 (25) San Diego..... 1,220 (26) Nogales..... 52	7,339
12 (San Francisco).....	(28) San Francisco..... 18,202 (47) Denver.....	18,202
13 (Seattle).....	(30) Seattle..... 27,430 (29) Portland, Oreg..... 9,054 (33) Great Falls..... 895 (46) Omaha (part)..... 2	37,410
14 (Honolulu).....	(32) Honolulu..... 1,853	1,853
17 (Ketchikan).....	(31) Juneau..... 5,762	5,762
Grand total.....		289,719

## UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

Dec. 31, 1946

Coast Guard district	Customs port	Total
1 (Boston).....	(4) Boston..... 13,078 (1) Portland, Maine..... 9,708 (2) St. Albans..... 2,655 (5) Providence..... 3,613	29,054
2 (St. Louis).....	(45) St. Louis..... 19,791 (12) Pittsburgh..... 4,069 (34) Pembina..... 123 (35) Minneapolis..... 8,828 (40) Indianapolis..... 5,225 (42) Louisville..... 3,854 (43) Memphis (part)..... 9,267 (44) Vacant (Des Moines)..... 116 (46) Omaha (part)..... 806	52,079

# UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES—Continued

Dec. 31, 1946—Continued

Coast Guard district	Customs port	Total
3 (New York)	(10) New York..... 41,085 (6) Bridgeport..... 7,665	48,750
4 (Philadelphia)	(11) Philadelphia..... 19,369	19,369
5 (Norfolk)	(14) Norfolk..... 14,080 (13) Baltimore..... 20,110 (15) Wilmington, N. C..... 7,529	41,719
7 (Miami)	(18) Tampa (part)..... 18,319 (16) Charleston..... 1,627 (17) Savannah..... 3,787	23,73
8 (New Orleans)	(20) New Orleans..... 16,967 (18) Tampa (part)..... 865 (19) Mobile..... 6,475 (21) Port Arthur..... 3,654 (22) Galveston..... 9,047 (23) Laredo..... 1,714 (24) El Paso..... 6 (43) Memphis (part)..... 76	38,804
9 (Cleveland)	(41) Cleveland..... 14,160 (7) Ogdensburg..... 6,576 (8) Rochester..... 8,514 (9) Buffalo..... 8,422 (36) Duluth..... 3,980 (37) Milwaukee..... 12,544 (38) Detroit..... 27,248 (39) Chicago..... 7,509	88,953
10 (San Juan)	(49) San Juan..... 274 (51) St. Thomas..... 78	352
11 (Long Beach)	(27) Los Angeles..... 6,841 (25) San Diego..... 1,441 (26) Nogales..... 53	8,335
12 (San Francisco)	(28) San Francisco..... 18,687 (47) Denver.....	18,687
13 (Seattle)	(30) Seattle..... 30,275 (29) Portland, Oreg..... 9,342 (33) Great Falls..... 963 (46) Omaha (part)..... 2	40,582
14 (Honolulu)	(32) Honolulu..... 3,324	3,324
17 (Ketchikan)	(31) Juneau..... 6,038	6,038
Grand total		419,779

# UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

Dec. 31, 1947

Coast Guard district	Customs port	Total
1 (Boston)	(4) Boston..... 14,010 (1) Portland, Maine..... 10,171 (2) St. Albans..... 2,723 (5) Providence..... 3,903	30,807
2 (St. Louis)	(45) St. Louis..... 18,405 (12) Pittsburgh..... 3,163 (34) Pembina..... 68 (35) Minneapolis..... 7,704 (40) Indianapolis..... 4,727 (42) Louisville..... 3,893 (43) Memphis (part)..... 8,653 (44) Vacant (Des Moines)..... 108 (46) Omaha (part)..... 458	47,088
3 (New York)	(10) New York..... 43,951 (6) Bridgeport..... 8,129 (11) Philadelphia..... 20,362	72,442
5 (Norfolk)	(14) Norfolk..... 14,817 (13) Baltimore..... 21,091 (15) Wilmington, N. C..... 7,906	43,814

Coast Guard district	Customs port	Total
7 (Miami)	(16) Charleston..... 1,726 (17) Savannah..... 3,050 (18) Tampa (part)..... 20,797	25,573
8 (New Orleans)	(20) New Orleans..... 18,027 (18) Tampa (part)..... 842 (19) Mobile..... 7,063 (21) Port Arthur..... 3,771 (22) Galveston..... 9,593 (23) Laredo..... 1,802 (24) El Paso..... 6 (43) Memphis (part)..... 76	41,180
9 (Cleveland)	(7) Ogdensburg..... 6,519 (8) Rochester..... 8,469 (9) Buffalo..... 8,068 (36) Duluth..... 3,973 (37) Milwaukee..... 12,309 (38) Detroit..... 27,444 (39) Chicago..... 7,697 (41) Cleveland..... 13,909	88,385
10 (San Juan)	(49) San Juan..... 342 (51) St. Thomas..... 64	406
11 (Long Beach)	(27) Los Angeles..... 7,780 (25) San Diego..... 1,553 (26) Nogales..... 73	9,406
12 (San Francisco)	(28) San Francisco..... 19,318 (47) Denver.....	19,318
13 (Seattle)	(30) Seattle..... 31,045 (29) Portland, Oreg..... 9,160 (31) Juneau..... 6,266 (33) Great Falls..... 996 (46) Omaha (part).....	47,467
14 (Honolulu)	(32) Honolulu..... 3,830	3,830
Grand total		429,719

# UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

Dec. 31, 1948

Coast Guard district	Customs port	Total
1 (Boston)	(4) Boston..... 14,780 (1) Portland, Maine..... 10,616 (2) St. Albans..... 2,782 (5) Providence..... 4,101	32,279
2 (St. Louis)	(45) St. Louis..... 17,241 (12) Pittsburgh..... 2,646 (34) Pembina..... 78 (35) Minneapolis..... 7,079 (40) Indianapolis..... 4,087 (42) Louisville..... 3,893 (43) Memphis (part)..... 7,908 (44) Vacant (Des Moines)..... 108 (46) Omaha (part)..... 481	43,611
3 (New York)	(10) New York..... 48,236 (6) Bridgeport..... 8,481 (11) Philadelphia..... 20,936	75,653
5 (Norfolk)	(14) Norfolk..... 15,451 (13) Baltimore..... 21,794 (15) Wilmington, N. C..... 8,170	45,415
7 (Miami)	(18) Tampa (part)..... 21,726 (16) Charleston..... 1,799 (17) Savannah..... 3,191 (49) San Juan..... 386 (51) St. Thomas..... 69	27,171
8 (New Orleans)	(20) New Orleans..... 18,931 (18) Tampa (part)..... 830 (19) Mobile..... 7,600 (21) Port Arthur..... 3,869 (22) Galveston..... 10,058 (23) Laredo..... 1,919 (24) El Paso..... 6 (43) Memphis (part)..... 76	42,280

# UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES—Continued

Dec. 31, 1948—Continued

Coast Guard district	Customs port	Total
9 (Cleveland).....	(41) Cleveland..... 13,937 (7) Ogdensburg..... 6,570 (8) Rochester..... 8,576 (9) Buffalo..... 8,116 (36) Duluth..... 4,066 (37) Milwaukee..... 12,381 (38) Detroit..... 28,205 (39) Chicago..... 7,969	89,820
11 (Long Beach).....	(27) Los Angeles..... 8,702 (25) San Diego..... 1,738 (26) Nogales..... 79	10,519
12 (San Francisco).....	(28) San Francisco..... 19,921 (47) Denver.....	19,921
13 (Seattle).....	(30) Seattle..... 31,718 (29) Portland, Oreg..... 9,462 (31) Juneau..... 6,522 (33) Great Falls..... 1,025 (46) Omaha (part).....	48,727
14 (Honolulu).....	(32) Honolulu..... 4,080	4,080
Grand total.....		440,476

## UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

Dec. 31, 1949

Coast Guard district	Customs port	Total
1 (Boston).....	(4) Boston..... 15,501 (1) Portland, Maine..... 10,998 (2) St. Albans..... 2,827 (5) Providence..... 4,245	33,571
2 (St. Louis).....	(45) St. Louis..... 17,316 (12) Pittsburgh..... 2,652 (34) Pembina..... 80 (35) Minneapolis..... 6,716 (40) Indianapolis..... 4,275 (42) Louisville..... 4,005 (43) Memphis (part)..... 8,103 (44) Vacant (Des Moines)..... 76 (46) Omaha (part)..... 490	43,713
3 (New York).....	(10) New York..... 47,751 (6) Bridgeport..... 8,722 (11) Philadelphia..... 21,097	77,570
5 (Norfolk).....	(14) Norfolk..... 15,867 (13) Baltimore..... 22,454 (15) Wilmington, N. C..... 8,398	46,719
7 (Miami).....	(18) Tampa (part)..... 22,358 (16) Charleston..... 1,878 (17) Savannah..... 3,364 (49) San Juan..... 414 (51) St. Thomas..... 75	28,089
8 (New Orleans).....	(20) New Orleans..... 19,623 (18) Tampa (part)..... 815 (19) Mobile..... 8,022 (21) Port Arthur..... 3,953 (22) Galveston..... 10,410 (23) Laredo..... 1,986 (24) El Paso..... 6 (43) Memphis (part)..... 76	44,897
9 (Cleveland).....	(41) Cleveland..... 14,085 (7) Ogdensburg..... 6,594 (8) Rochester..... 8,669 (9) Buffalo..... 8,192 (36) Duluth..... 4,152 (37) Milwaukee..... 12,459 (38) Detroit..... 28,769 (39) Chicago..... 8,203	91,123
11 (Long Beach).....	(27) Los Angeles..... 8,557 (25) San Diego..... 1,735 (26) Nogales..... 94	10,386

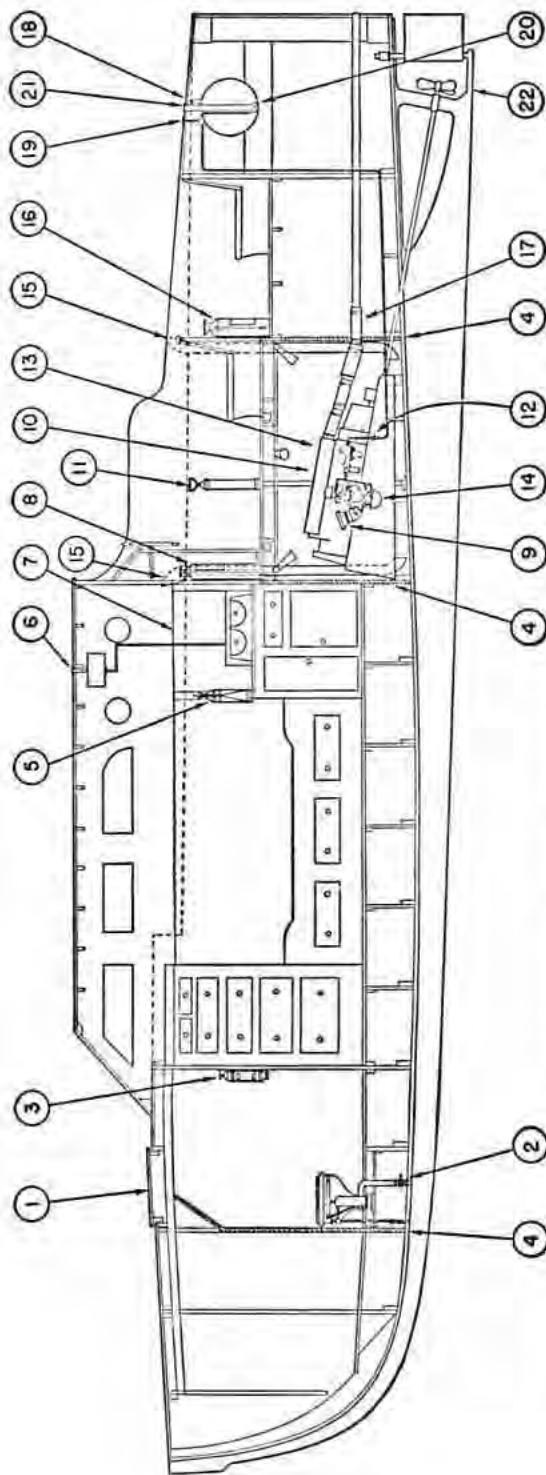
Coast Guard district	Customs port	Total
12 (San Francisco).....	(28) San Francisco..... 20,253 (47) Denver.....	20,253
13 (Seattle).....	(30) Seattle..... 32,411 (29) Portland, Oreg..... 9,773 (33) Great Falls..... 1,025 (46) Omaha (part).....	43,212
14 (Honolulu).....	(32) Honolulu..... 3,312	3,312
17 (Juneau).....	(31) Juneau..... 6,578	6,578
Grand total.....		449,423

## UNDOCUMENTED VESSELS NUMBERED IN THE UNITED STATES

Dec. 31, 1950

Coast Guard district	Customs port	Total
1 (Boston).....	(4) Boston..... 16,160 (1) Portland, Maine..... 11,377 (2) St. Albans..... 2,883 (5) Providence..... 4,460	34,880
2 (St. Louis).....	(45) St. Louis..... 17,120 (12) Pittsburgh..... 2,427 (34) Pembina..... 87 (35) Minneapolis..... 6,474 (40) Indianapolis..... 4,292 (42) Louisville..... 3,942 (43) Memphis (part)..... 7,951 (46) Omaha (part)..... 499 (47) Denver..... 6	42,708
3 (New York).....	(10) New York..... 48,801 (6) Bridgeport..... 8,893 (11) Philadelphia..... 21,002	78,696
5 (Norfolk).....	(14) Norfolk..... 16,349 (13) Baltimore..... 23,264 (15) Wilmington, N. C..... 8,608	48,221
7 (Miami).....	(18) Tampa (part)..... 22,958 (16) Charleston..... 1,935 (17) Savannah..... 3,395 (49) San Juan..... 448 (51) St. Thomas..... 85	28,821
8 (New Orleans).....	(20) New Orleans..... 20,115 (18) Tampa (part)..... 805 (19) Mobile..... 8,265 (21) Port Arthur..... 4,019 (22) Galveston..... 10,711 (23) Laredo..... 2,094 (24) El Paso..... 6 (43) Memphis (part)..... 76	46,091
9 (Cleveland).....	(41) Cleveland..... 14,253 (7) Ogdensburg..... 6,573 (8) Rochester..... 8,768 (9) Buffalo..... 8,282 (36) Duluth..... 4,199 (37) Milwaukee..... 12,572 (38) Detroit..... 29,160 (39) Chicago..... 8,443	92,250
11 (Long Beach).....	(27) Los Angeles..... 8,883 (25) San Diego..... 1,702 (26) Nogales..... 103	10,688
12 (San Francisco).....	(28) San Francisco..... 20,598	20,598
13 (Seattle).....	(30) Seattle..... 32,828 (29) Portland, Oreg..... 9,764 (33) Great Falls..... 1,052	43,644
14 (Honolulu).....	(32) Honolulu..... 3,458	3,458
17 (Juneau).....	(31) Juneau..... 6,762	6,762
Grand total.....		450,907





Inboard profile of a cabin cruiser indicating safety installations and construction recommended to minimize the hazards most commonly found on powerboats.

1. Escape hatch big enough for adult to pass through in case of emergency.
2. Accessible seacock on toilet discharge which can be closed when cruiser is unattended.
3. Portable one quart carbon tetrachloride fire extinguisher.
4. Watertight bulkheads.
5. Portable 4-lb. carbon dioxide fire extinguisher.
6. Alcohol stove fuel tank arranged to fill through house deck.
7. Woodwork close to stove insulated and protected with sheet metal.
8. Manually operated fire-extinguishing system using carbon dioxide, serving the engine compartment.
9. Flame Arrestor on air intake of engine carburetor to baffle any possible backfire.
10. Storage battery in ventilated lead-lined box, protected by cover to prevent tool or metal object falling on terminals and causing flash. (Located on stbd. side of motor.)
11. Fixed Navy-type bilge pump with strainer on suction pipe.
12. Shut-off valve on gasoline fuel line near carburetor.

13. Accessible seacock on intake for circulating water for cooling the engine.
14. Drip pan (closed) with drain connection to engine intake manifold.
15. Ventilating pipes running down all the way to bilge in all four corners of engine room, connected with cowl-type ventilators on deck.
16. Portable 2½-gallon foam type extinguisher.
17. Exhaust pipe insulated with asbestos where it passes through bulkhead.
18. Vent pipe leading outboard from gasoline tank, so gasoline vapors will discharge outside hull.
19. Shut-off valve on gasoline fuel line near tank with extension to deck for accessible operation.
20. Gasoline fuel tank with baffle plate and with filling pipe extending nearly to bottom of tank.
21. Deck fill connected to top of gasoline tank so any overflow will drain overboard.
22. Metal skeg shoe protecting propeller from striking obstructions.